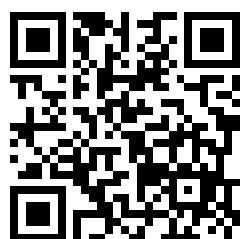


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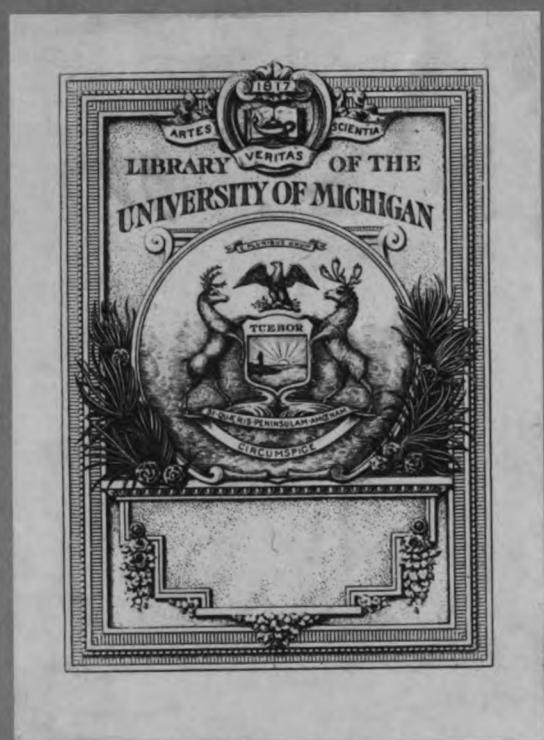
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THE MUSEUM  
of  
FAR EASTERN ANTIQUITIES  
(Ostasiatiska Samlingarna)  
STOCKHOLM



Bulletin N:o 4

Dedicated to  
His Royal Highness Crown Prince  
GUSTAF ADOLF

---

Stockholm 1932

The figure reproduced on the cover of the Bulletin is a Neolithic ceramic object from the Pan-shan group of Kansu.



The figure reproduced on the cover of the Bulletin is a Neolithic ceramic object from the Pan-shan group of Kansu.









Faith-Ell photo.

The Crown Prince with party of archaeologists at Asine.

No. 3 from left in the front-row is Mr. Wace, Head of the British Archaeological School in Athens, no. 4 is the Crown Prince, no. 5 M. Picard, Head of the French Archaeological School in Athens, and no. 6 Mr. Kyparissis, Custodian of Antiquities within the Ministry of Education of the Greek Government.

No. 3 in the back-row is Dr. Frödin and no. 4 Prof. Persson. The man to the extreme left in the front row is Mr. Wettergren, formerly Curator of the Section of Art Industry in the National Museum, now Manager of the Royal Dramatic Theatre. The second from the right is Mr. Hallin, the Treasurer of the Swedish Asine Committee.

No. 2 in the back-row is Dr. Gjerstad, who in recent years has explored the prehistory of Cyprus.

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STOCKHOLM 1932

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*Till Hans Kunglig Höghet Kronprins Gustaf Adolf bedja vi  
få överbringa vårt värdsamma tack för det föredöme, som givits oss  
alla i anspråkslöst och noggrant studium av och hängivet intresse för  
den fjärran österns gamla konst.*

*To His Royal Highness the Crown Prince Gustaf Adolf of Sweden  
we wish to present our respectful and sincere thanks in grateful re-  
cognition of the inspiring example he has set us all by his modest and  
careful scholarship and by his earnest devotion to the study of the  
ancient art of the Far East.*

~~Adresserat till  
Herrn  
G. H. Anderson~~

T. J. Anne Tor. Dr. Bendz David Bergström

W. Prior. Ferdinand Boberg. H. O. Kullberg

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Carsten Kempf Shank W. Kinnarud

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carly. Ranning Thorslund amis Olofsson

David Lindström

Edward Lindström.

C. T. Woy ~~Thor~~<sup>1</sup> Schubert

Aleksander Myslakow hutin hineon

James Thorley. Erik Nyström Nils Palmgren

Fantellius Oscar Raphael Grindberg

Johnny Rosval. Ein von Rosen C. L. Rydhs

Hanna Rydhs Munk af Rosenschöld Wolde

Carl Sahlins J. L. Saxon. Lars Saxon.

Tor Schnellh Odelman.

Owall Sivu M. Sennum. J. A. S. P. Stokh

A. M. Tallgren Margaretha Anna Frangs  
+ Signatur

Signatur Danielsen

F. Wamberg) Gustafsson O. Wester

Henry Westbury, Lib. Vertagus Handskriven

W. Percival Yetts. Handskriven





Faith-Ell photo.

**The Crown Prince excavating at Asine.**

**From the left the Crown Prince, Prof. Persson, Mr. Faith-Ell and Dr. Frödin.**

# CROWN PRINCE GUSTAF ADOLF AS A PROMOTER OF ARCHAEOLOGICAL RESEARCH

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## STUDENT YEARS AND RESEARCH IN SWEDEN BY OSCAR ALMGREN.

The Crown Prince Gustaf Adolf, having ever since his youth been keenly interested in the study of antiquities, has steadily widened the scope of his interest and has given practical expression to it by initiating and promoting scientific investigations. For those whom he has honoured with the task of supervising this research-work he has done everything possible in order to facilitate the carrying out of the tasks entrusted to them. Viewing these investigations in a strictly objective and scientific light, he has always delegated the executive leadership entirely to the specialists. But whenever time has permitted, he has himself joined us in our labours as an ordinary fellow-worker, freely and modestly, with trowel and measuring rod in hand, and at such times his quiet perseverance and accuracy, his keen powers of observation and his shrewd judgment are a great asset to and have a stimulating and encouraging effect on those taking part in the work. On the various Committees that he has set up in recent years with a view to promoting Swedish investigations in foreign countries he has acted as Chairman not merely in name but also in deed — and to excellent purpose. He personally lays before the meetings every item on the agenda, after having himself gone thoroughly into them, and by his clear-sightedness and engaging qualities he succeeds in overcoming all difficulties.

It is but natural, therefore, that the Crown Prince's archaeological collaborators should desire to take the opportunity to present a brief and concise review of his activities in this sphere, as they have developed stage by stage from the youthful Prince's first modest efforts to the farsighted and influential Crown Prince's extensive research undertakings in distant countries — undertakings the substantial results of which have attracted the attention and won the appreciation of the entire scientific world.

The Royal country-seat of Tullgarn is situated in a district that abounds in prehistoric remains, and these aroused the interest and enthusiasm of the young Prince Gustaf Adolf at quite an early age. This interest was encouraged by his aide-de-camp Count Göran Posse, who often suggested the prehistoric sites as

objects of their riding trips together. In 1898 and subsequent summers the King's Custodian of Antiquities, Dr. Hans Hildebrand, was invited to Tullgarn in order to instruct the Prince in archaeological excavation work, and a number of small barrows were investigated and were found to contain the remains of cremated bodies and objects dating from the later Iron Age.

The Prince also showed much interest in the prehistoric hilltop fortifications that have been found in various places in Central Sweden, and maps were made of several of them by the Prince and his aide-de-camps G. Posse and H. Cederschiöld.

As an undergraduate at Upsala University in 1902—03 the Prince attended lectures on, *inter alia*, classical, Egyptian and Scandinavian archaeology, and took part in local archaeological excursions, in the course of which he showed initiative in connection with interesting excavation work at Håga, near Upsala, on the foundations of a prehistoric hall and on a large barrow, in which were discovered numerous objects dating from the middle of the Bronze Age (about 1000 B. C.), including a sword, a buckle, knives and buttons of bronze partially overlaid with gold.

During his stay at a bathing resort in the neighbourhood of Norrköping in the summer of 1903, the Prince wrote a description of the prehistoric relics found in the district, including interesting rock-carvings dating from the Bronze Age. This account, which was published in the Proceedings of the Östergötland Archaeological Society in 1904, later inspired Dr. Arthur Nordén to make an exhaustive study of the local rock-carvings, the results of which he published in a large illustrated work.

When in 1905 the Prince with his Consort entered into possession of the Palace of Sofiero, near Helsingborg, in Scania, he began to set on foot archaeological investigations in that district. Thus, in the summer of 1905, on his initiative Professor Montelius investigated a large barrow containing a number of graves dating from the Bronze Age at Spärplinge, on the estate of Kulla-Gunnarstorp, and in the same year the Prince himself excavated a stone cist dating from the close of the Stone Age discovered at Tinkarp, near Sofiero. In the course of this work he made the interesting observation that three of the roof-stones were cleft from one and the same block. He published an account of this investigation in the review "Fornvänner" in 1906.

During the summers of 1907, 1908 and 1910 he invited the present writer to carry out excavations in the same locality. On these occasions the investigations were specially devoted to three megalithic tombs (passage-graves), which were discovered south of Helsingborg, and in which numerous finds were made in the way of flint implements, beautifully ornamented pottery and amber beads. A fourth similar grave at Glumslöv was investigated by the Prince in 1920—21 in collaboration with Dr. Otto Frödin.

Since that period the Crown Prince has devoted his archaeological activities especially to organizing Swedish excavation work in countries bordering the

Mediterranean and in the Far East. He still follows however with keen interest the progress made in our archaeological research-work at home, and he has in manifold ways furthered the work of the Royal Academy of Letters, History and Antiquities, as well as that of the Swedish Archaeological Society.

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### ASINE BY NILS PALMGREN.

The interest that the Crown Prince has shown in archaeology ever since his youth is happily combined with a broadminded appreciation of artistic qualities and a decided penchant for classical cultures. Not that he has actually studied the history of the fine arts at any academy, but he has devoted much private study to the subject, paying special attention to the ancient arts of Egypt, Greece and the Far East, as is evidenced not only by the scope of his library but also by his wide scholarship and keen powers of discernment in these matters. Moreover, he has broadened his experience by undertaking extensive journeys in pursuit of knowledge. His personal initiative and assistance have been the means of opening up various lines of research for Swedish students of archaeology to follow on classic ground. During the past decade Swedish expeditions have been organized and equipped for research-work in Greece, Cyprus and Egypt, and a Swedish School of Archaeology and Art History has been founded in Rome. His Royal Highness has been the self-appointed prime mover in all these undertakings, and from the moment of their inception his interest in them has never flagged.

In 1901, as an undergraduate of nineteen, he made his first trip to Italy, in the course of which he studied with lively interest the country's inimitable art treasures, as well as its archaeology, on which indeed all European research in that field is founded. In the years that followed he returned to Italy at short, regular intervals. His trip to Egypt in 1905 widened his outlook considerably and strengthened his interest in art history and archaeology. During that journey he also paid a visit to Greece, where his receptive mind found delight in the wealth of classical art treasures, and where he gained his first insight into the country's wonderful archaeological resources. As yet, however, there was no thought of his ever having an opportunity of delving into her soil.

But in the autumn of 1920 the Crown Prince for the second time finds himself in Greece — on this occasion in company with, among others, Prince Eugen and Dr. Hjalmar Lundbohm, of Kiruna. It is a delightful time of year and the country is looking its best, so that the beauty of the classic landscape can be enjoyed to the full. The party travels about the country, visiting, among other famous places, Delphi and the Homeric sites in Argolis that were excavated by Schliemann, and of course making a keen study of the art treasures of Athens. The

Crown Prince shows deep interest in all that he sees and is much impressed by his experiences during his trip. It is in the light of all these impressions and experiences that a scheme begins to take shape in his mind: Why, he asks himself, should not the Swedes undertake the excavation of some suitable site in Greece?

And so, acting upon this inspiration, the Crown Prince, in company with Svoronos, the Greek scientist and antiquarian, visited an ancient site in Argolis, in the neighbourhood of the town of Nauplia. This site was believed to have been the "Asine" of the Homeric poems; it lies in a singularly beautiful position on a cliff jutting out into the Bay of Nauplia. The French had, it is true, sought and obtained the right to excavate this ruined site, and Louis Renaudin, the French archaeologist, had already made an experimental excavation and a preliminary inspection of the spot in question. Upon the Crown Prince's enquiry, however, the French scientists obligingly declared themselves willing to surrender to the Swedes the right to excavate this ancient site, subject to the sanction of the Greek Government. It happened that Dr. Axel W. Persson, then lecturer in Classical Archaeology at Lund, was at that time working at the French School of Archaeology in Athens, though he was temporarily absent from the capital on a local expedition. The Crown Prince immediately summoned him and commissioned him to make a preliminary survey of the site selected for excavation and to report on the results of his observations. This preliminary inspection was carried out at Christmas time and yielded such satisfactory results that Persson strongly recommended the excavation of the site. The Crown Prince at once requested the Greek Government to grant to Swedish archaeological students a concession for carrying on excavations at Asine, and his request was readily granted.

Upon the Crown Prince's return to Sweden the question of organizing the excavation work was discussed by those directly interested: the Crown Prince himself, Professor Montelius, the King's Custodian of Antiquities, Dr. Frödin, and Dr. Persson. The outcome of these discussions was that the Asine Committee was formed in the summer of 1921, the Crown Prince being elected Chairman. The collection of funds for promoting the expedition thereupon proceeded very rapidly. Otto Frödin and Axel W. Persson were appointed leaders of the expedition. So much progress had been made by the spring of 1922 that it was possible to start the first campaign. A number of young Swedes, mostly undergraduates, conducted the scientific work at the various points on the site, while a large number of Greek labourers and refugees from Asia Minor were engaged in digging, sifting and suchlike work. This time the Crown Prince was not able to join the expedition.

The second campaign was started shortly afterwards, that is to say, in the autumn of 1922, and then the Crown Prince was able to set out for Greece. He was not present when the actual digging began, it is true, but he arrived about a week

later in company with his aide-de-camp Count Carl Gustaf Hamilton. The Crown Prince resided in the neighbouring town of Nauplia, every morning driving out by car to the site of the excavations, where he worked hard with pick and shovel throughout the day. In the course of the excavation work during the spring some traces had been found of what was afterwards discovered to be the Mycenaean necropolis situated on Mt. Babouna, though at the time the excavators were not absolutely certain of the nature of their discovery. It was now the Crown Prince's lot to take a hand in turning the first sods that covered the "shaft grave" known as No. 1 in this necropolis. It proved to be an extremely interesting archaeological find. The design of the tomb, with its two fine approaches, *dromoi*, and its double sepulchral niches, is somewhat unusual. Moreover, the finds that it contained were both numerous and valuable. Hundreds of clay vessels, partly of Mycenaean and partly of an early geometrical style, were unearthed; magnificent objects of gold came to light, also artistically cut stones and fragments of silver vases, while there were innumerable beads, studs and small objects of bronze.

While this work was going on within the tomb, the ground was being excavated all round it, and gradually there were revealed, one after another, further magnificent shaft graves. There were soon over a score of them. At the same time, in the lower part of the town extremely interesting and profitable excavation work was going on at the approach to the acropolis, and the Crown Prince transferred his labours in part to that section of the site. He also found time to work on the so-called Geometrical Tower up on the acropolis itself. He thus gained much experience from the excavation work in which he took part, and he was able to obtain a definite grasp of the many problems and possibilities that it involved.

When the third campaign started in 1924 the Crown Prince had no opportunity of returning to Greece, but from his own country he followed with the keenest interest the progress and successful conclusion of the excavation work in which he had taken so active a part.

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#### CYPRUS BY EINAR GJERSTAD.

Sweden does not as yet possess a joint institute for Nordic and foreign archaeological research, which might be able to collect the different archaeological interests around the fundamentally common goal, but fortunately we have in our Crown Prince a personality who has been willing, and able, to fulfil the task that would be incumbent upon such an institute. Through his all-round and manifold interest in archaeological research as such, no matter whether it be carried on in Sweden or abroad, His Royal Highness, in accordance with the

principle that "Union is strength", has been eager to arouse the feeling of brotherhood and unity between archaeologists, which, particularly in a small country like ours, is of the utmost importance if great scientific results are to be achieved.

This many-sided and varied archaeological interest exhibited by the Crown Prince has found expression in his support of, and active participation in, the exploration of the Cypriote culture.

The importance of Cyprus in the history of culture consists first and foremost in the island's having constituted a connecting link between Oriental and Greek cultures. As one of the primary tasks of Greek Archaeology is to enquire into and ascertain the inter-relation and mutual influence of these cultures, it is obvious that the study of Cypriote culture is a highly important contributory factor in the study of Greek culture. Holding this view, then, and being deeply interested in researches into Greek culture, His Royal Highness was disposed to embrace with sympathy the scheme for systematic excavations in Cyprus, and when a Committee was appointed in the spring of 1927 for the purpose of organizing a Swedish archaeological expedition to Cyprus, the Crown Prince was kind enough to place his services at its disposal as Chairman of this Committee. It is generally known that when His Royal Highness agrees to accept such an office he does not do so as a mere matter of form but as a means to give to the undertaking concerned all the help and support of which he thinks it deserving. And this the Cyprus Expedition has indeed found to be the case on many occasions. The Crown Prince not only took an active part in the work at the commencement of the expedition, but he has also since, in the course of the excavations, in many ways facilitated the work, the development and results of which he has followed with never-failing interest, and under the stress of the various difficulties that an archaeological expedition of this kind always encounters, the Crown Prince's letters instilled hope and courage into the minds of its members.

In the autumn of 1930 the Crown Prince made a voyage to Cyprus, staying there during the whole of October. In the course of his stay he inspected the excavations carried out by the expedition, and he himself made an excavation of a series of tombs from the Archaic period (700—500 B. C.) near the village of Stylli, close to the town of Famagusta, on the east coast of Cyprus, as the result of which a fairly wide gap in the otherwise continuous finds of the expedition was filled. However, a still more important result of the Crown Prince's visit to Cyprus is the fact that he succeeded in interesting the local British authorities in effecting a division of the expedition's finds, whereby the claims of Cyprus and Sweden, but chiefly those of science, were simultaneously satisfied. As a principle of division it was laid down that the find-units, i. e. tomb-groups and deposits, were not to be split up, but were to accrue as a whole either to Cyprus or Sweden, and, furthermore, that Sweden was to receive

a representative series of finds from all epochs and of all kinds of objects. On the basis of these terms Sweden received about two-thirds of the nearly 18 000 finds, covering pottery, faience, bronze, iron, silver and gold objects, as well as stone and terracotta sculptures. Furthermore, Sweden received all the sherd-material of any scientific value.

The work of a scientific expedition is, as we know, only half done by the end of the excavations. There remains the work of publication. Accordingly, with that sense of scientific values that is such a distinguishing feature of his archaeological interests, the Crown Prince has aided and supported with the keenest comprehension the expedition's endeavour to present the results of the excavations in a scientifically satisfactory manner.

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#### EGYPT BY PEHR LUGN.

When in the nineties Professor Karl Piehl was carrying on egyptological research in Uppsala, he was fortunate enough to obtain direct support from the Royal House. King Oscar II, himself a learned orientalist, was keenly interested in the introduction of the new subject for study at the University and contributed towards a museum collection in Uppsala.

Piehl subsequently succeeded also in interesting the then Crown Princess Victoria in his efforts. In the course of a long visit to Egypt the Crown Princess had acquired a thorough knowledge of that country's antiquities — a knowledge brilliantly demonstrated in the work "Vom Nil", which was written with deep conscientiousness and scholarship. On repeated occasions the Queen showed her interest in the Uppsala Museum by presenting it with gifts, and as late as during my service there after 1918 the Museum was the recipient of a number of valuable collections from its Royal Patroness. Moreover, since the year 1895 the Museum has borne the Queen's name.

Thus, members of our Royal House have of old interested themselves in Egypt and its antiquities. It was therefore a splendid family tradition that the Crown Prince Gustaf Adolf followed when, in 1927, he consented to become the Chairman of the Egypt Committee, whose function has ever been, and still is, to support and promote the work of the Egyptological Museum in Stockholm. Thanks to this Committee, and above all to its Chairman, the Museum has made rapid progress during the five years of its existence; its collections have been augmented year by year with valuable new acquisitions, while the Committee has been constantly called upon to perform new and attractive tasks.

Of these latter, the field-work in Egypt must of course be regarded as the most important. It had from the very outset formed part of our plans to endeavour to carry on excavation work, preferably on some prehistoric site, and, thanks

to the personal interest shown by the Crown Prince in the project, we were enabled to realize our plans earlier than we had originally anticipated.

In the course of his visit to Egypt in the autumn of 1930 the Crown Prince opened negotiations with Professor H. Junker, Director of the German Archaeological Institute in Cairo, with a view to Swedish participation in the latter's excavations on the extensive Neolithic dwelling-site of Merimde Beni Salâme, in the N. W. part of the Delta about 50 km. from Cairo. The final outcome of these negotiations was that in November and December 1931 the Egyptological Museum took part in these Austrian excavations, resulting in the Museum's being able to add about 2,000 new objects to its collections.

The next step was to procure for the Museum a concession to excavate for its own account, and we very soon decided upon Abu Ghâlib as being both chronologically and in its location a suitable site for our purpose. As soon therefore as the Austrian-Swedish excavations were completed at Christmas 1931, we started work on the Abu Ghâlib site. This archaeological site lies about 12 miles south of the above-mentioned Merimde Beni Salâme and about 2 miles south of Abu Ghâlib railway station on the Cairo—Teh el-Barûd line. The place was discovered by Junker in the course of his famous reconnaissance trip to the West Delta in 1928 and, in view of the surface finds he came across — as a matter of fact, he had no concession for carrying on excavation-work there — was determined by him as being a new microlithic station dating from the end of the Capsien period.

The microliths have so far been found almost exclusively on a hill, about 90 m. long and 10—15 m. broad, through which we cut sections in 4 different places. The result was the discovery of about 7,000 microliths, including several new types hitherto unknown in Egypt. The great majority of the microliths appear to have been used as drills, presumably for drilling holes in beads; for, besides the microliths, we found in the hill carnelian beads in various stages of manufacture, materials used in bead-making and a not inconsiderable quantity of carnelian chips. There seems little doubt that Abu Ghâlib must have been an ancient bead-factory, where the flint tools required for the manufacture of beads were also produced. Evidence that these tools were made on the spot is to be found in the large quantity of flint chips we found on the "microlith hill". Moreover, in no less than 13 places within the concession area we came across, on the surface, great quantities of larger drills with 1—3 points of a type hitherto unknown in Egypt. These too occurred together with carnelian. In addition, we found three small blocks of stone with grooves, which were evidently used for grinding beads.

During the work of excavation we came to the surprising conclusion that the "microlith hill" is not of a similar age to that of the flint tools etc. found in it, but is, at least for the most part, of modern origin. Every indication goes to show that the sand, clay etc. of which it consists, as well as the antiquities found in

it, were thrown up some decades ago when excavations were being carried on for the construction of a canal, which has now disappeared, and which thus intersected, or — let us hope — perhaps only just touched, the "factory area". Under these circumstances it has proved impossible to find any clues for determining the date of the microliths.

Accordingly, during the next excavation season our task will be to endeavour to detect the microliths *in situ*. Not until this problem has been solved will it be possible to determine whether, as Junker assumed, they date from the end of the Capsien period or whether they are of more recent origin. Presumably light will then be thrown on the (so far obscure) question as to the date of the newly discovered larger drills.

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#### THE FAR EAST BY K. HAMADA AND J. G. ANDERSSON<sup>1)</sup>.

The earliest impetus to the Crown Prince's interest in the art of the Far East was afforded by a purchase made by him in October 1907 of some porcelain pieces of the Kang Hsi—Chien Lung period obtained from an art shop in Stockholm.

During the years that followed (1908—1910) the Crown Prince when in London made the acquaintance of Mr. R. L. Hobson, Keeper of the Department of Ceramics and Ethnography of the British Museum, and of Mr. G. Eumorfopoulos, the foremost of all western collectors of Chinese antiques. While studying the collections in the care or possession of these two connoisseurs his interest was widened, down through the ages, to embrace even the Ming and later also the Sung dynasty. New acquisitions were made in London art shops and in that way the foundation was laid for a collection of Chinese art.

The Crown Prince's journey to Greece in the winter of 1920—21, which led to the Swedish excavations at Asine (as related in another section of this article), revived his interest in archaeological research. When in 1921 Admiral Louis Palleron of Vega, the first chairman of the Swedish China Research Committee, passed away, the Crown Prince consented to accept the chairmanship of the Committee, and the Committee's field research work in China, which in that very year was largely transferred from palaeontological to archaeological excavations, gave the Crown Prince a new bond of interest in the Far East.

In the meantime his own collecting activities had become entirely centred upon

<sup>1)</sup> The section on the Crown Prince's visit to Japan and Korea has been prepared by Professor K. Hamada, who acted both in Japan and in Korea as head of the staff of archaeologists who, through the courtesy of the Japanese Government, were attached to the Royal party.

The editor of this bulletin takes this opportunity to present his heartiest thanks to the eminent Japanese colleague for his courtesy in contributing to this article.

Chinese antiques, and he was carefully building up a collection comprising objects dating back to such early historical times as the Han and Chou dynasties.

For many years it had been his cherished hope to visit the Far East in order to view on the spot the relics of a glorious past. In 1926 this dream came true when the Crown Prince, accompanied by the Crown Princess, undertook a tour round the world. During the summer of that year the Royal party visited the United States, where the Crown Prince took advantage of every opportunity of visiting and studying the numerous rich collections of Far Eastern art, both public and private.

From the United States the journey proceeded via Honolulu to Japan.

Upon their arrival in Tokyo early in September, 1926, the Royal party stayed in the Kasumigaseki Palace. The Prince and Princess were warmly received by the Empress and Prince Regent (as the Emperor was out of Tokyo owing to his long illness), and Mr. T. Yamagata, Master of Ceremonies, drew up for the Royal guests the most suitable plan for seeing the best collections and places of artistic as well as archaeological importance in Japan and in Korea. The Crown Prince visited first of all the Tokyo Imperial Museum and the Imperial University, and in the latter institute he was particularly fascinated by the Han objects (lacquer, etc.) found in the Lo-lang tombs in Korea, and shown by the excavators themselves, Professors Sekino and Harada. The University moreover gave him the happy chance of taking part in the excavation of a Neolithic shell-mound at Ubayama. Professor Matsumura and Prince Oyama accompanied him there.

A slight illness unfortunately prevented the carrying out of some part of the Prince's plan in Tokyo and shortened his stay in Kyoto and Nara, where he had many things to study. After having made a trip to the Ise Shrine, the oldest Shinto shrine in Japan, the Royal party proceeded to Kyoto, where they were privileged to stay in the old Omiya Palace for four days. Famous temples and shrines in the city, besides those in the vicinity, such as at Daigo, Udzumasa, Uji and Ohara, were visited in great haste though they were studied as thoroughly as the very limited time permitted, and even an ancient tumulus near Kôryû-ji temple was visited. Of course the Prince spent much time in the Kyoto Museum, where he was first engrossed in studying the old paintings of this country, and in the Kyoto Imperial University Professor Hamada had the pleasure of showing the archaeological collections he himself had made in Japan and in China.

But the chief desire of the Crown Prince in Japan was to study the art treasures of the Shôsôin in Nara. This is the Imperial repository that has preserved since the 8th century down to this day all the furniture and art objects of the court of the Emperor Shômu. They are mostly importations from China of the T'ang dynasty, with a few pieces imitated in Japan. The wooden storehouse itself is an 8th century building, opened by Imperial order only once a year, in November. For the Royal scholar, however, it was opened as a special favour, and,

moreover, unusual facilities for studying the objects were graciously provided. He rode to the Shôsôin twice every day during his three days' stay in Nara, in the morning and in the afternoon, patiently investigating everything, being especially delighted in the three-colour glazed porcelain, etc., while all the members of his party were quite exhausted, only admiring the Prince's indefatigable enthusiasm. He made also a very thorough inspection of the Nara Imperial Museum, being particularly interested in the ancient sculpture there. He paid visits to the chief old temples in this pleasant and quiet old capital and in the neighbourhood. Tôdai-ji with its huge bronze Buddha, Yakushi-ji with its beautiful pagoda, and Tôshôdai-ji, Hokke-ji, etc., were amongst the places visited. His visit to Hôryû-ji temple, however, must have fascinated him immensely, as the buildings and other objects are of the Suiko period, that is to say, of the Six dynasties in China. The party was welcomed also in the nunnery of Chûgû-ji, close to the temple, by the kind abbess as well as by the meditating Kwannon statue of the 7th century.

The party then made a pilgrimage to Kôyasan, the Mt. Athos of Buddhism in Japan. They passed one night on the mountain in one of the monasteries. Next, in Osaka they were shown the famous collection of Chinese bronzes belonging to Baron Sumitomo, with those of Messrs. Murayama and Motoyama. The light cruiser *Kiso* was offered by the Japanese Navy for the trip in the Inland Sea to Miyajima, which gave the party very great pleasure. They landed at Beppu, a hot-spring resort in Kiûshû, where they were able to visit the ancient rock-cut Buddhas near the city, the best examples of this kind in Japan. They then crossed the channel to Korea.

Viscount Saito, then Governor-General of Korea, thought that it would be the most adequate way of welcoming such a Prince archaeologist to invite him to an actual excavation of an ancient tomb at Keishû. Messrs. Fujita, Sawa, Koidzumi of Keijô and Moroga of Keishû thus began work at a tomb near the Gold Crown Tomb, which some years ago yielded marvellous treasures of a Shiragi King of the 6th century. To the great joy of the excavators and the Royal visitors this tomb also revealed a gold crown and other precious remains just before the party's arrival there. Those present will never forget the remarkable scene of all the brilliant golden objects displayed in the centre of the excavated mound, and the moment when the Crown Prince took up for the first time the gold crown in his own hands. It seemed as if he would have stayed here for another day if the evening darkness had not obliged him to go back to his hotel, which was situated at the foot of the mountain of Sekkutsuan, a few miles distant from Keishû. The Crown Prince and Princess had already ascended the steep mountain on the evening they arrived, to see the wonderful stone image of Buddha up there, and they also visited nearly all the historical sights in the town of Keishû on the following day.

In Keijô (Seoul) he studied most carefully the two Museums in the city, especially those objects discovered from the Han cemeteries in the Lo-lang district, to

which he was able to pay a visit, as also to the famous tombs with painted walls of the Kokuri period (7th century), when he stayed at Heijô, a beautiful native city by the great Daidô river.

The visit of the Royal party to China can properly be reviewed under three headings: first the stay in Peking, then the journey to Shansi, and finally the visits to Tientsin, Pukow and Shanghai.

In Peking the Crown Prince and Crown Princess stayed from the 17th to the 31st of October. The visit to the capital of China was strictly informal, but the Chinese Government had undertaken elaborate and perfectly adequate preparations in order to make the stay in Peking both pleasant and instructive to the Royal student of their ancient culture.

It would take us too long to relate in detail the sequence of visits to the different palaces, museums and temples, to the Great Wall and the Ming Tombs. However, some few incidents were of so striking a nature that they deserve brief mention.

On the 19th of October, one of the finest days of the wonderful North China autumn, the Royal party paid their first visit to the Palace grounds. The authorities had with charming courtesy decided that this visit of a Royal guest specially interested in their ancient monuments should be solemnized by the opening for the occasion of the Wu Men gate, which since the revolution had been opened only once, for the funeral procession of President Yüan Shih-kai. Thanks to this arrangement it was not necessary for the Royal visitors to enter the Forbidden City by one of the minor gates, as is nowadays the rule, but they had the full advantage of the splendid main approach right from Chien Men through the series of magnificent gates leading up to the Throne Halls.

At Tien An Men the Crown Prince's party left their motor cars, and the entry into the Forbidden City was made on foot, an arrangement that gave them a full impression of the spaciousness of the courts and the splendour of the palaces.

At Tuan Men the party was received by the directors of the three palace museums that now occupy the greater part of the Forbidden City. Invitations were then formally presented for the closer examination of the different collections, which was scheduled for the following days. Little did the curators of the museums then realize the accuracy and persistence with which their guest of honour was to examine their specimens. But as soon as they perceived that the Crown Prince had an expert knowledge and a sincere desire to make a thorough study of the exhibits, their willingness and attention knew no bounds. In the northern part of the Forbidden City they brought out treasures of porcelain and pictures that had never before been shown to a non-Chinese, and excellent arrangements were made to accommodate the party in the museum during the extra days, when treasures were revealed that until then had remained unknown to Western eyes, but which are now in part exhibited in the Palace Museum.

When the Crown Prince's visit to China was planned, it was his desire to see

some of the prehistoric sites, but, owing to local disturbances, Yang Shao Tsun and the other Honan sites were impossible to reach. Then a new possibility was found, thanks to the cooperation of Professor Erik T. Nyström of Taiyuanfu, the founder and head of the Nyström Institute for scientific research within the Shansi province. Professor Nyström being fully aware of the fact that Shansi was then one of the most peaceful provinces, wished to invite the Royal guests for a trip to Shansi in order to show them a part of China relatively unaffected by foreign influences. With the help of Professor Nyström it was possible to locate, just outside Taiyuanfu, the capital of Shansi, two Stone Age sites, and the study of these sites formed for the Royal visitors one of the attractions during the journey in Shansi, which proved a complete success, thanks to the preparations made by the provincial authorities, combined with the hospitality offered by Professor Nyström.

When the party definitely left Peking on the 11th of November, Tientsin was their next destination. Here the Crown Prince visited the home of Lo Chen-yü, the famous Chinese antiquarian, who for the occasion had arranged an exhibition of antiquities in his possession. Of foremost interest were the magnificent ivory carvings from the An Yang site in Honan.

When passing through Pukow en route for Shanghai the party paid a visit to the home of Mr. Orvar Karlbeck, then sectional engineer of the Tientsin—Pukow Railway. Mr. Karlbeck, who is a noted collector, especially of Chinese bronzes, had exhibited a very interesting body of material, which later on passed into the possession of the Museum of Far Eastern Antiquities in Stockholm.

In Shanghai, under the very able guidance of Mr. Peter Bahr, several important private collections were studied.

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Since his return from the Far East the Crown Prince has during the last few years still further increased his own collection. At present it comprises 1,000 specimens, including many objects of striking beauty and notable scientific interest. A proof of the untiring care with which this collection has been built up is afforded by the card index compiled by the owner and containing not only his own careful description of the specimens but also an exhaustive record of all statements made concerning each individual object by experts who have in the course of years studied the collection.

It has sometimes been said by foreign students of Far Eastern art and archaeology that in this line of research Sweden occupies at present a noted position. We like to believe that these friendly critics are justified in their statement, and if so, much is undoubtedly due to the work of our Crown Prince.

The part Sweden has played in bringing to light the early history of China, financed by our China Research Committee, was only rendered possible thanks

to the pleasant co-operation between the Chairman of the Committee, the Crown Prince, and its founder and treasurer Dr. Lagrelius. Recently, by organizing the Karlbeck syndicate, an association of connoisseurs and collectors, they have encouraged the appreciation and understanding of Chinese art in this country. In this connection it is only fair to emphasize that our collectors of Chinese antiques, men like Hellner, the brothers Hultmark, Hellström, and several others, have worked with remarkable independence, skill and success. But the Crown Prince, in the midst of that small association of connoisseurs, *The China Club*, has created the amiable bond between all our lovers of ancient Chinese art. First and last, he has been an example to all of us in striving modestly and persistently to attain the two principal ideals in life, Beauty and Truth.

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**The Crown Prince prospecting in the Yang-chü-chen site near Taiyüanfu. 7. 11. 1926.**

**In the pit from left Dr. Lagrelius, the Crown Prince and Prof. Nyström.**



**The Crown Princess (left) and the Crown Prince (third from left) having luncheon at Yang-chü-chen.**



# PREHISTORIC FINDS FROM THE ISLAND WORLD OF THE FAR EAST, NOW PRESERVED IN THE MUSEUM OF FAR EASTERN ANTIQUITIES, STOCKHOLM

BY

*IVAR SCHNELL*

## INTRODUCTION.

One of the countries visited by Their Royal Highnesses the Crown Prince and Crown Princess of Sweden in the course of their world tour in 1926 was Japan. The visit aroused the keen interest of the representatives of Japanese archaeology, both professional men of science and amateurs. Arrangements had been made for the Crown Prince and Princess to visit, *inter alia*, Ubayama, in the province of Shimofusa, just east of Tokyo, and there watch the work of excavating a shell-mound. These excavations, which were undertaken during the months of May—July, were supervised by Prof. A. Matsumura, of the Imperial University of Tokyo. The visit of the Royal party is described in the Journal of the Anthropological Society of Tokyo (47 Oyama). The numerous and beautiful finds that came to light in the course of their visit were presented as a gift to the guests, thus forming a splendid nucleus to a collection of Japanese antiquities. During T. R. H.'s stay in Japan this collection was supplemented by a great many gifts from Japanese archaeologists, with the result that a very representative collection eventually came into being, which included also finds from Formosa and Korea. The richest and most complete of the various collections was that presented by Prince Kashiwa Oyama, though every one of the gifts contributed towards the collection objects of great value as well as of considerable importance for making the collection a truly representative one. The nature and size of the various gifts will be seen from the following table.

Upon the return of the Crown Prince and Princess to Sweden the Japanese collection was handed over to the Museum of Far Eastern Antiquities. This meant that the prehistoric cultures of the Japanese islands from Kyushu as far as Hokkaido became richly represented in this museum. Moreover, a combination of fortunate circumstances brought it about that the area that forms the continuation of the archipelago of Eastern Asia northwards, viz. the Kuriles and Kamtchatka, soon provided representative objects for the Museum of Far Eastern Antiquities. In 1922 Dr. Sten Bergman brought home a collection of Neolithic finds from Kamtchatka, which he and his collaborator René Malaise had discovered. Then, in 1930 Bergman brought back with him an absolutely unique collection of pottery and tools from the Southern Kuriles. Both these collections

D o n o r s	Numbers	C e r a m i c						Tools of stone						Bone-implements				
		J o m o n		Y a y o i		I w a i b e		C l a y s c u l p t u r e s		A x e s a n d c h i s e l s		S e k i b o s		K n i v e s a n d s p e a r - h e a d s		A r r o w - h e a d s		
		W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	W h o l e	F r a g m e n t s	
Soc. for the Preservation of Ant. at Keishu .....	4023—4028	—	—	—	—	5	2	7	—	4	13	1	—	—	—	—	—	
G. Endo, S. Moori .....	4004	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	
T. Fukuda .....	4020	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	
Y. Ikadatsu .....	4009	3	—	—	—	—	—	—	2	2	—	1	3	—	—	—	—	
Y. Midzuki .....	4014	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Z. Minami .....	4015	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	
H. Motoyama .....	4007	—	—	5	—	—	—	—	—	—	—	—	248	—	—	—	—	
Nakayama .....	4012, 4063	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	
Y. Nishimura .....	4001	—	—	—	—	28	—	—	—	—	—	—	—	—	—	—	—	
S. Okada .....	4008	—	—	—	—	—	—	—	—	—	—	—	25	—	—	—	—	
K. Oyama .....	4002	—	28	—	14	1	—	11	2	9	22	7	4	—	—	—	—	
M. Saito .....	4005	—	—	—	—	—	—	—	4	—	—	37	1	—	—	—	—	
K. Suzuki .....	4003	—	—	—	—	—	—	—	—	—	4	24	—	—	—	—	—	
S. Takano .....	4018	—	—	—	—	—	—	—	2	—	1	—	1	—	1	—	—	
Tokugawa .....	4006	5	—	—	—	—	—	1	10	—	3	24	8	7	—	—	—	
Unknown .....	4010, 4013, 4017, 4019, 4021, 4022		—	17	—	—	1	—	9	—	5	60	7	—	—	—	—	
Total	—	8	45	8	14	35	3	45	4	26	459	28	18	—	—	—	—	

were incorporated with the Museum of Far Eastern Antiquities, which thus into possession of representative prehistoric collections from the island w Eastern Asia all the way from Formosa to Kamtchatka. These collections such great interest that they well merit a detailed description, and Professor Andersson has very kindly granted me the privilege of writing this description. I should like to take this opportunity to thank him for having entrusted them to me, as well as for the valuable guidance he has given me in the course of my work.

The main object we have laid before us in publishing an account of the collections has been to present careful reproductions and detailed descriptions of the most important objects, but it has been necessary to introduce each of the four groups of finds with a brief explanatory chapter. The chapter on the Japanese antiquities has been very kindly revised by Professor B. Karlgren, while the chapters relating to the finds in Kamtchatka and the Kuriles have been prepared by Dr. S. Bergman. I hereby tender my respectful thanks to these gentlemen for their valuable assistance.

I.

THE PREHISTORY OF JAPAN.

The year 1878 saw the birth of scientific archaeological research in Japan. It was in that year that the zoologist Edward S. Morse discovered during a railway journey from Yokohama to Tokyo that the railway line cut through thick "shell-mounds" just north of Omori Station. Morse, who was well acquainted from studies in both America and Europe with the type of archaeological remains known as shell-mounds or kitchen-middens, at once set about investigating the place in collaboration with some Japanese scientists, and various stone implements and pottery, as well as animal and human bones, came to light. The report on his investigations was published the next year as the first official proceedings of the newly opened University of Tokyo (34 Morse).

The Omori discovery caused a tremendous sensation in Japan, and one Neolithic dwelling-site after another of the same or a similar character was discovered. In the same year as the report on the Omori find was published, H. von Siebold wrote an account of five newly discovered shell-mounds, together with other prehistoric finds and sites (52 von Siebold). In 1880 J. Milne published a description of a number of dwelling-sites found in Hokkaido, the most northerly of the Japanese islands, and was able to state that similar discoveries had been made everywhere in Japan as far south as Kyushu (31 Milne).

Among the numerous publications inspired by the Omori find may be mentioned also a well-illustrated description of the dwelling-site at Okadaira, excavated by I. Iijima and C. Sasaki, the work being published as a supplement to Morse's paper (19 Iijima). An excellent illustrated work on archaeological remains discovered throughout Japan was published in 1884 by T. Kanda (22 Kanda).

The succeeding years proved in other ways also important ones for the development of Japanese archaeology. In 1885 was founded an archaeological society in Tokyo, and as early as in 1882 a chair of archaeology had been founded at Tokyo University, its first occupant being S. Tsuboi.

It need hardly be said that the existence of archaeological remains in Japan had not been entirely neglected prior to Morse's investigation. On the contrary, numerous collections existed both in private hands and in Shinto temples. The fact is that these remains were believed to emanate from heroes of antiquity, so that it might actually happen that a prehistoric object formed the nucleus around which a temple was built. In Europe also Japanese archaeological remains were known through collections which P. F. von Siebold, the eminent student of Japan, brought home with him. In his work "Nippon" there are illustrated for the first time in a European publication a number of Japanese stone objects, and in 1839 there was published in Copenhagen an account of the objects from von Siebold's collection that had found their way into the Danish National Museum. The third

occasion on which a description of Japanese archaeological discoveries was published in a European language was in 1868, when A. W. Franks dealt with the 180 objects that had so far come into the possession of European museums (9 Franks).

I am unfortunately unable to state how far Japanese literature prior to 1878 was occupied with the subject of archaeological remains and discoveries; however, it probably contains but little that the modern science of archaeology is concerned with. It is worth mentioning, however, that the prehistoric shell-mounds are spoken of in the very earliest Japanese literature. Thus, the following occurs in *Hitachifudoki* (= Topography of the Province of Hitachi): In olden times there lived men of gigantic stature. They dwelt on mounds and collected and ate mussels, the shells of which were collected in heaps (37 Nagai). — This quotation dates from 713 A. D., and similar statements as to the supernatural origin of the archaeological remains are found in many other contemporary and later works.

It is undoubtedly a precarious undertaking to speak about a literature that one does not understand but only knows through hearing it spoken of; nevertheless, I believe I am right in saying that the initiative taken by Morse, and which at first inspired so many sound publications and ideas on the subject, has not left any noteworthy traces behind it in Japanese literature. It was foreigners, such as Baelz, Milne, Munro and Gowland, who during the closing years of the 19th and the first two decades of the 20th century have endeavoured to carry the archaeological research-work some steps further. There existed however no concerted plan of action or method of procedure, so that the results achieved were meagre. What was of most interest to research-workers is seen from the following quotation taken from an essay written in 1913 (28 Maeda, p. 159): *Das ungelöste Problem der gesamten japanischen Steinzeitforschung ist: Von welchem Volke stammen diese Ueberreste (the shell-mounds)?* — The discussion on this problem has left innumerable traces behind it but was not able to lead to any definite result, as the necessary material was wanting. Two theories came first to the mind when, as often, the discussion became quite heated. The one, whose chief upholder was the above-named Professor Tsuboi, claimed that a tribe of dwarfs, the Koropoguru, who are mentioned in the Ainu legends, were the owners of Japan's Neolithic culture, whereas another Tokyo professor, the anatomist Y. Koganei, believed that the Ainu folk were the Stone Age settlers in the islands of Japan. Tsuboi's theory is now quite out of date, but it has been of considerable importance in that it brought the inquiry into the problems of Japanese antiquity into a blind alley, which explains the small progress made during the decades round about the turn of the century.

In 1908, however, Dr. N. Gordon Munro thought that the time was ripe for compiling a summary of the results so far achieved in a book, which is to this day the only collective work on Japanese antiquity that exists in any European language (36 Munro). Munro's work shows what an enormous amount of material

it had been possible to collect, but the almost total absence of data relating to archaeological discoveries robs the collected material of its value. Moreover, it shows that Japanese archaeology had not yet become acquainted with European methods of investigation, in spite of the fact that this island kingdom, with its manifold interesting prehistoric problems, must be regarded as a paradise for scientific archaeological research.

Nevertheless, plans had not been altogether wanting for the promotion of systematic research-work. Morse's Omori report, to start with, is a model publication of its kind, and J. Milne, in a work published in 1881, which was interesting and full of ideas, had suggested a method of investigation, which was not introduced into European archaeology until 20 years later, viz. that of taking advantage of the secular emergence of the islands for the purpose of dating dwelling-sites (32 Milne). It is a well-known fact that this method has been employed chiefly in connection with the formerly ice-covered area of Northern Europe, where the comparatively regular rising of the land yielded extremely good results. The movements that gave rise to the sinking and rising of the Japanese chain of islands have not however been caused by any uniform phenomenon, and the course of development has therefore been singularly lacking in uniformity, so that it is still far from clearly established. Recent land-movements have been studied at a number of stations round the coasts of Japan ever since 1901, it being found that the maximum movement has been 20 mm. per annum. The greatest change in the course of the 20-year period 1901—1921 was however limited to 80 mm. It may be mentioned, moreover, that North Hondo and South Kyushu are at present in process of elevation, whereas the stations in other regions have registered sinking tendencies. The area undergoing the greatest changes proved to be the Pacific coast, while the coasts of the Sea of Japan were more stationary (23 Kawakami).

The irregularity of the land-movements makes it of course impossible to utilize them as a basis for an absolute chronology, but the movements recorded have been so considerable that a further study of them may well afford a means of making relative determinations of the antiquities that have connections with the old coast-lines. Morse had already established the fact that the Omori dwelling-site must be a relic of a more elevated shore-line, for it is a typical shore dwelling-site, though now the seashore lies half a mile away. As a matter of fact, Morse was able to mention other recently discovered dwelling-sites around Yedo Bay that lay at a still further distance from the coast, but which showed unmistakable indications of having been established in the immediate neighbourhood of a seashore (34 Morse, p. 4 f.). The removal of the shore dwelling-sites from the vicinity of the sea is due to two factors: the elevation of the land and a strong sedimentation in the river delta around the Bay of Yedo. Milne has paid most attention to the process of sedimentation, the course of which he studied in maps dating as far back as to the 15th century, and he endeavours by this

means to determine the date of the Omori dwelling-site. His conclusion is that its maximum age must be 3 000 years and its minimum age 1 500. This result did not encourage the taking of any further steps along the line of research he had initiated, while the ideas to which Milne had given rise through his discussion of the land-elevation in Hokkaido and round the Bay of Yedo were not taken up seriously until 1926, when an article, written (unfortunately for me) in Japanese, was published on the Yedo Bay dwelling-sites' relation to the elevation of the land (55 Toki). Toki's tables and maps show clearly the important bearing that the question of land-elevation has on the study of dwelling-sites in these regions. On the other hand, I have not been able to follow his detailed discussion of the subject.

Toki's above-mentioned article dates from a period — the 1920's — during which Japanese archaeology was passing entirely in the hands of keen-minded Japanese scholars, and it was during this epoch that the true nature of the problems relating to the early history of the chain of islands could be made clear and the way paved for a systematic study of them. I shall now endeavour, on the basis of the splendid material brought home by H. R. H. the Crown Prince of Sweden as a gift from Japanese archaeologists and now preserved in the Museum of Far Eastern Antiquities in Stockholm, to describe the position so far attained by Japanese archaeology. Should my review of the position suffer from a surfeit of errors, I trust that that fact will be taken by Japanese archaeologists as evidence of the necessity and desirability of publishing an exhaustive account of the early history of Japan written in a European language.

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Quite unexpectedly the geologist N. Naora was able to report in 1931 that traces of a palaeolithic Stone Age had been found in the province of Harima, in South Hondo (39 Naora). Up to the present the discovery is the only one of its kind that has been made amongst the Japanese islands; it consists of a number of roughly hewn stone implements, the nature of which cannot be exactly determined, and some bones of extinct Pleistocene mammals (*Elephas antiquus* and *Loxodonta namadicus* Naumann), one of these bones showing signs of having received powerful blows.<sup>1)</sup>

The Harima discovery is still of too isolated a character to justify any pronouncement as to its importance. It should however be pointed out that there would be nothing surprising in the discovery of continental faunas of the Tertiary and Pleistocene periods on the Japanese islands, for Japan appears to have been connected with the mainland right into the Pleistocene period. On the other hand, it is a matter for surprise that such slight traces of a Palaeolithic,

<sup>1)</sup> N. G. Munro at one time endeavoured, though without any definite success, to find evidence of the existence of a Japanese Palaeolithic Age (36 Munro, pp. 41 et seq.; 35 Munro).

and none whatever of an Epipalaeolithic, Stone Age have been brought to light, in spite of the fact that throughout the entire Quaternary period Japan was well adapted for human settlement. For during the glacial periods of that era the snow-line reached merely to so low a level as would cover only the very highest mountain-tops with snow (53 Simotomai). It is not improbable, however, that the gap that now appears to separate the Harima discovery from the earliest Neolithic discovery will eventually be filled. The chief reason why this has not already been done is presumably the fact that the soil in Japan is interspersed with archaeological remains, the inter-relation of which it is impossible to distinguish by reason of two thousand years of intensive agriculture. Consequently, those relics that have succeeded best in asserting themselves are the dwelling-sites that abound in pottery — and particularly so when they are distinguished by huge shell-mounds. As, moreover, the Neolithic tools that have been found are often of a particularly primitive type, one would seem justified in assuming that only by a fortunate combination of circumstances will the opportunity occur of differentiating between any collection of Epipalaeolithic implements that may be found and the scattered finds dating from the Neolithic Age.

Our knowledge of Japan's prehistoric period thus commences in a fully developed Neolithic Age, with polished axes and artistic pottery. Within this Neolithic Age, however, there exists a distinct difference between South and North Japan, which must be taken carefully into consideration in dealing with the country's early history. The population of Japan consists of two entirely distinct races, namely, the undoubtedly very heterogeneous Japanese and the long-bearded Ainu race, which now lives as a mere remnant of a people in Hokkaido, Saghalin and the Kuriles. The present dwelling-places of the Ainu are however places of refuge, to which they have been gradually forced to retreat by the superior Japanese. Nevertheless, the Ainu succeeded in maintaining their independence in Hondo far into historical times, and it was not until the fifteenth century that they were definitely subjugated in Hokkaido. It is still far from clear how large a part of the Japanese islands the Ainu once inhabited, though there is much evidence to indicate that the Ainu belong to the people of the East Indian group of islands. The exceptionally long hair on face and body that is a marked feature of the Ainu race most closely resembles the types inhabiting the East Indies, and the Russian ethnologist L. Sternberg has shown that there are a number of features in the Ainu's culture that indicate a southern origin, particularly an East Indian origin (54 Sternberg). The Ainu would thus have immigrated via Formosa and the Ryukyu islands, and thence spread over Kyushu and Hondo. In the Ryukyu islands there still exist Ainu-like natives, but their relation to the Ainu race has not been closely investigated. If however the route followed by the original settlers is as presumed above, relics of Ainu occupation would be found all over Hondo and in Kyushu. It is believed that onomatological studies have afforded some proof of this, but they are now somewhat out-of-date

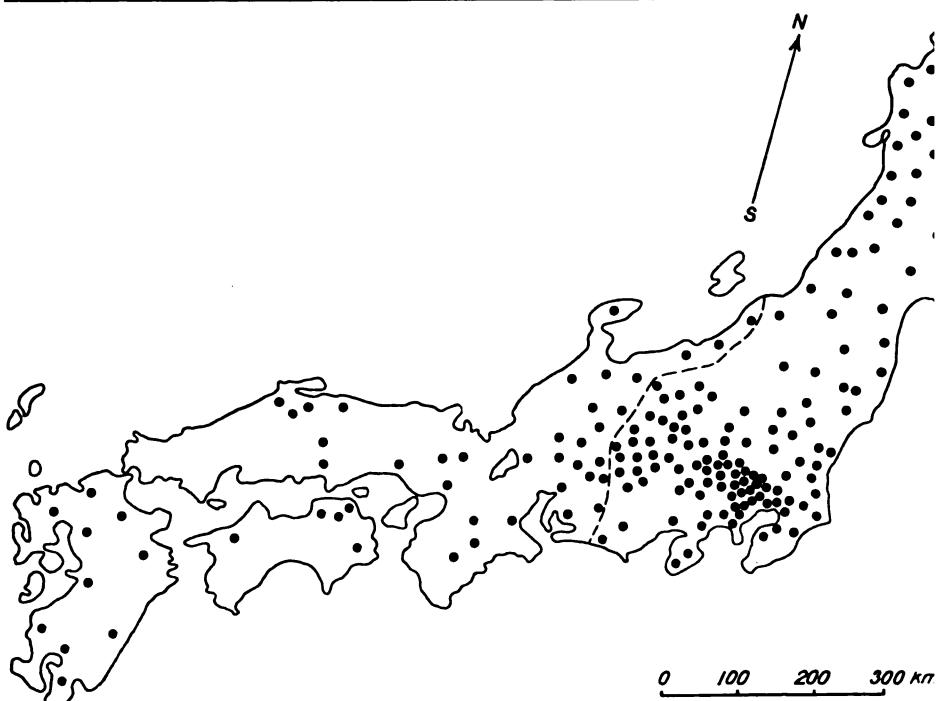


Fig. 1. Map showing the Neolithic sites in Japan (• = 50 sites).

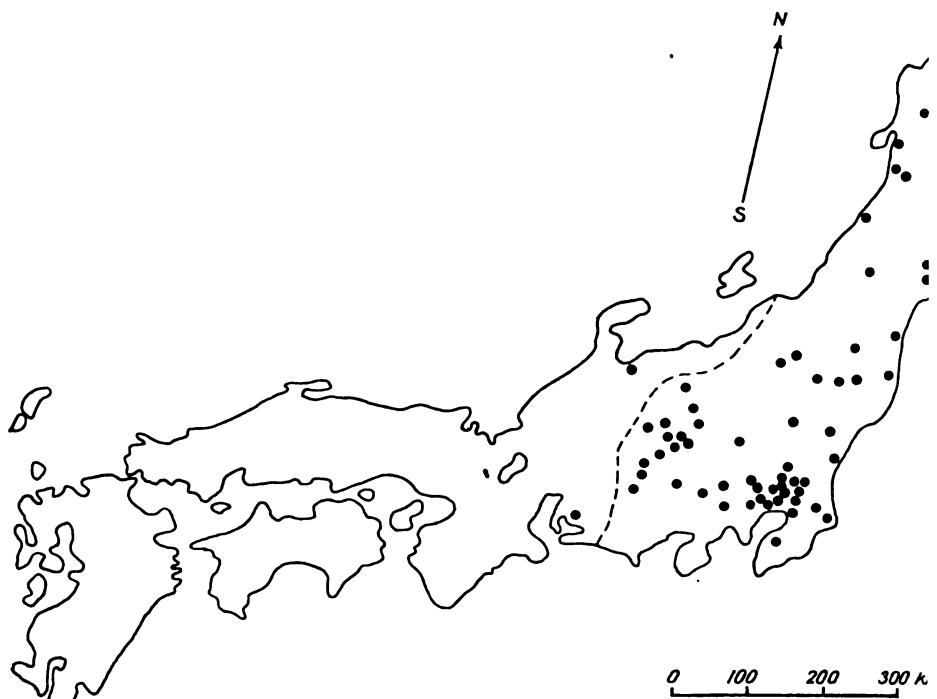


Fig. 2. Map showing places where idols have been found in Japan (• = 5 sites with

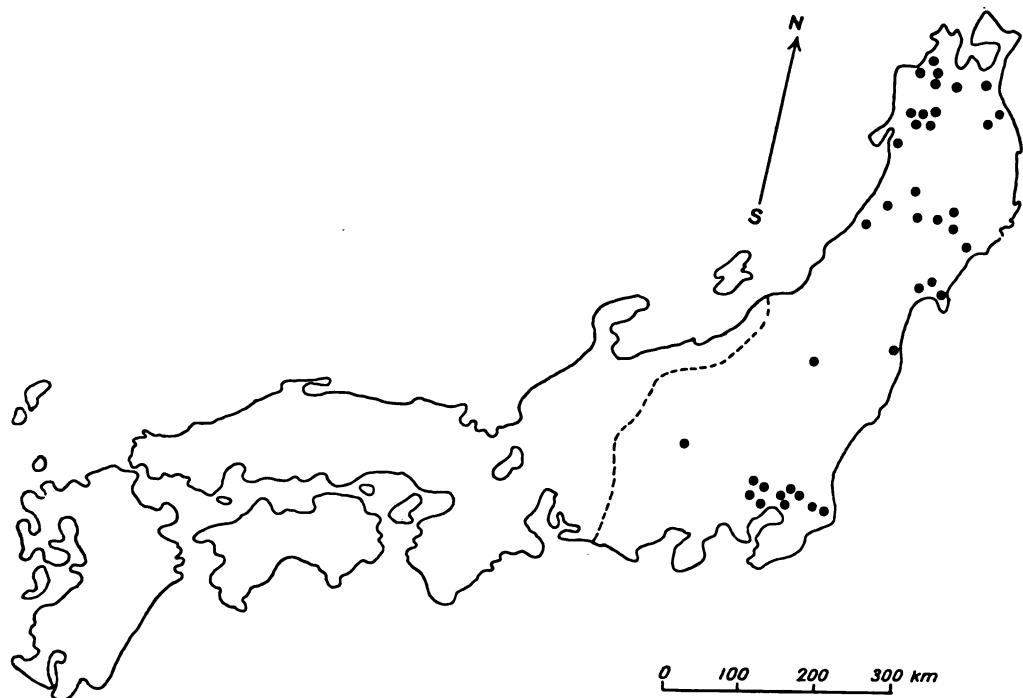


Fig. 3. Map showing places where vases with spouts have been found in Japan (• = 5 finds).



Fig. 4. Map showing the "Eneolithic" sites in Japan (• = 10 sites).

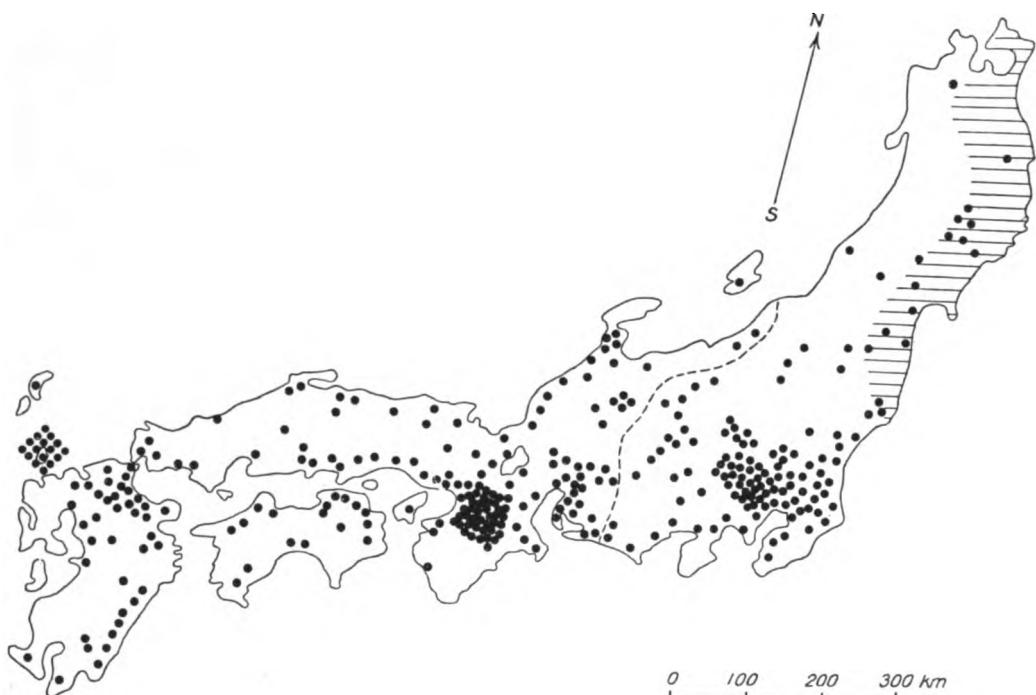


Fig. 5. Map showing the Iron Age tombs in Japan (• = 10 tombs).

and no doubt need revision before they can again find a worthy place in scientific discussion (7 Chamberlain). On the other hand, any Ainu immigration that may have taken place via South Japan is bound to have left traces amongst the archaeological remains that have come down to us, but so long as we do not know for certain the cultural stage at which the immigration occurred it is vain to look for any traces of it. We are however able to determine with some degree of accuracy the limits of Ainu settlement at a more recent epoch. It is related in Chinese chronicles (San-Kuo-chih) how Chinese functionaries visiting the Court at Yamato during the first half of the 3rd cent. A. D. found the Ainu folk thrust back to a frontier just east of Lake Biwa (17 Hara, p. 60 et seq.). This boundary-line then moves progressively northwards, and around the year 1000 A. D. the Ainu had been almost completely expelled from Hondo, the main island of Japan (6 Bishop, fig. 1).

There is no doubt that the gradual expulsion of the Ainu from Hondo could be demonstrated from the distribution of the various forms of archaeological remains, but so far this evidence has not been closely studied. The charts reproduced in figs. 1—5 seem however to afford the prospect of interesting results being derived from a detailed study of the distribution of this race. But before these charts can be discussed, a few general facts must be stated about prehistoric

Japan. In order to enable the reader to comprehend the names of the various types of Japanese pottery mentioned below, I have summarized them in tabular form in fig. 7.

The Neolithic phase in the history of Japan is represented by sporadic finds and shell-mounds or other dwelling-sites. The dwelling-sites principally found in Northern Japan are characterized by a great quantity of brownish-yellow or brownish-red, coarse and unturned pottery, the characteristic ornamentation on which is textile and cord impressions. This type of pottery is called *jomonshiki* (i. e. cord pattern). The "Æneolithic"<sup>1)</sup> culture is likewise characterized by sporadic finds and dwelling-sites, the pottery discovered being brownish-red, often turned and less frequently ornamented. It is called *yayoishiki*, after the name of the first place at which it was studied. Finally, the proto-historic Iron Age is represented chiefly by tombs containing a turned, grey type of pottery of excellent quality (*iwaibeshiki*). The *yayoi* pottery also occurs in this period, and it is then termed *hanibeshiki*.

On the map given in fig. 1 are marked certain Neolithic dwelling-sites that were known in 1928 from the list of dwelling-sites drawn up by the University of Tokyo. There are no less than 10,142 throughout Japan. Considering that the first dwelling-site was discovered as late as in the year 1877, the figure is imposing. It may be of interest to place on record the figures representing the number of known dwelling-sites, as published by the University in the years mentioned below (44 Nakaya, p. 152):

1897 = 1,841; 1898 = 2,281; 1901 = 3,133; 1917 = 5,188; 1928 = 10,142.

Each dot on the map given in fig. 1 denotes 50 dwelling-sites. The dwelling-sites are distributed throughout the Japanese islands, though North Japan has a far greater number than South Japan. In spite of the fact that the two areas are about equal in size, 75 % of the dwelling-sites have been discovered north of the Ainu boundary in the 3rd cent. A. D., marked on the map by a dotted line, and if we include those sites that lie between this boundary-line and Lake Biwa, we find that only 10 % of the dwelling-sites are in South Japan. The list of dwelling-sites compiled by Tokyo University contains however very heterogeneous material. Unfortunately I do not know how the dwelling-site lists are compiled, but the very quantity of recorded archaeological remains makes it impossible, one would imagine, to determine the nature of them with any accuracy. It has obviously therefore not been possible to divide the dwelling-sites recorded into groups according to the character of the pottery, which is essential if one is to gain an accurate idea of the ethnographical boundaries during the Neolithic period. It is certain, however, that no such *jomon* pottery as has been found in the northern islands exists in South Japan. The specimens of textile pottery, e. g. in the lowest

<sup>1)</sup> Following the practice of Japanese archaeologists, I apply the term "Æneolithic Age" to denote the final phase of Japan's Neolithic Age that was influenced by imported Chinese bronze objects.

deposits of the Ko dwelling-site, are of a different character, and in most cases it would seem that the clay vessels akin to the *yayoi* type represent the Neolithic pottery of South Japan. I am unable to say whether there is any sharp line of demarcation between the two ceramic cultures, but it may safely be asserted perhaps that there is some sort of boundary-line running down where the collection of dots on the dwelling-site map comes to an end just east of L. Biwa. In that case the line would mark the southernmost Ainu settlement that we are able to establish on the archaeological evidence so far available. It is unlikely however that the Ainu retained this position throughout the entire Neolithic period, if I have correctly interpreted the result of two exemplary investigations carried out by J. Nakaya, the one concerned with a kind of clay idols, and the other with some extremely typical clay vessels with a spout, found in large numbers on Ainu Neolithic dwelling-sites (40—44 Nakaya).

The first-mentioned investigation covers 837 clay idols collected from 424 dwelling-sites. The collection comprises, besides male and female figures, a few urns in the form of faces, masks and animal figures such as bears and monkeys. The human figures, a fine specimen of which is in the Stockholm collection (Plate I: 1), played an important part in earlier archaeological literature, as they were regarded as being realistic representations of the inhabitants themselves. Thus, the absence of a beard was taken as evidence of the correctness of the above-mentioned *koropoguru* theory, and the ornamental rings round the eyes have in some quarters been taken to be snow-glasses! Nakaya is, strictly speaking, the first to abandon these old ideas, and he associates the clay idols with the Neolithic pottery and its ornamentation, the variations of which are moreover reflected in the shape of the clay figures.

Nakaya's examination of clay vessels with a spout covered 450 well-preserved specimens found in 107 dwelling-sites. He divides the material, according to the shape, into four types: A, B, C and D (see fig. 6), of which type C is represented in the Stockholm collection (Plate I: 2), together with a fragment of type B. The four types are distributed over eastern Hondo in such a manner as to give rise to two centres, the one in the province of Kwanto, round Tokyo, and the other in the northernmost parts of Hondo. The relative frequency of the different types within these two centres will be seen from the table given below:

Type	A	B	C	D	Div.	Total
Kwanto .....	43	48	2	—	14	107
North Hondo .....	4	67	165	59	6	301
Total	47	115	167	59	20	408

It is apparent from the Table that type B is the basic form of these clay vessels, which has given rise to local forms: A in Kwanto, C and D in North Hondo.

Nakaya in fact interprets B as the earliest type, while D is described as the latest and simplest form of the spouted vessels.

The conclusion drawn from Nakaya's investigations is that clay idols and spouted vessels represent by reason of their distribution three cultural centres within the Ainu district, each centre moreover being distinguished by a separate

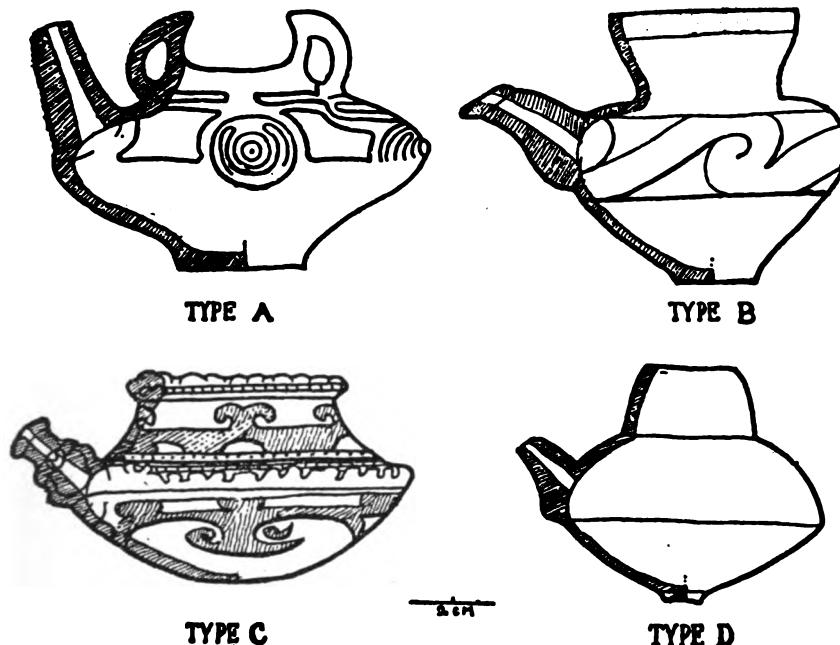


Fig. 6. The four types of vases with spouts (after J. Nakaya).

ceramic style. These styles, which now seem to be generally accepted by the Japanese archaeologists, are as follows: The *atsudeshiki*, the chief centre being the hill-country in the middle of North Hondo; this style is represented in the Stockholm collection by fragments collected from several dwelling-sites, notably from Ubayama, in the province of Shimofusa, where the four clay vessels shown in Plates II and III: 1—3 were found. The *usudeshiki*, with its centre in Kwanto; the Stockholm collection contains no good representative specimen of this style, whereas the *mutsushiki*, so called after Mutsu, the northernmost province in Hondo, where it is concentrated, is abundantly represented, the specimens including the clay vessels reproduced in Plates I: 2 and III: 4, 5 (45 Nakaya).

These three styles of pottery succeed one another in point of time in the order given, though they are also said to overlap one another chronologically; however, the exact relation between them is not as clearly brought out in available publications as one could desire.

Having made these general remarks I shall now revert to the discussion of the question of distribution, as shown in the maps (figs. 1—5). As mentioned above,

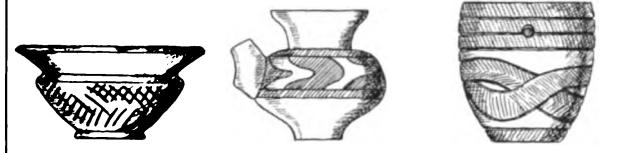
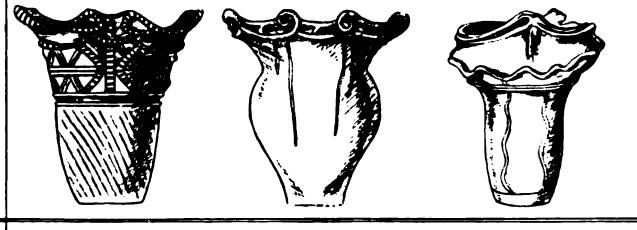
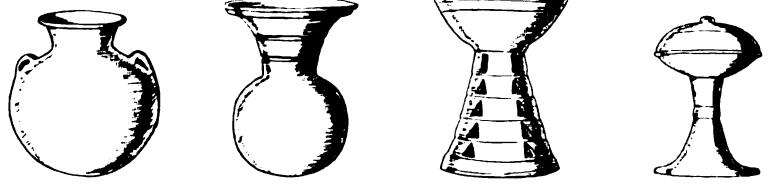
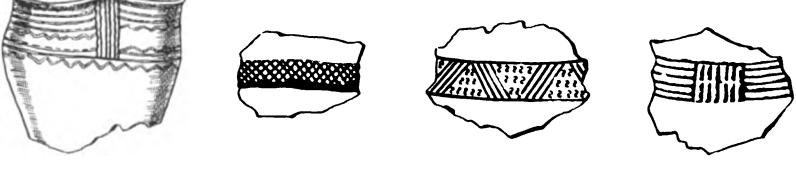
Proto-Japanese	Ainu (Uomonshiki)	Mutsushiki	
		Usudeshiki	
		Atsudeshiki	
	Iwabeshiki		
	Yayoishiki or Hanibeshiki		
	Stamp-porcelainated pottery		

Fig. 7. Diagram showing the different kinds of pottery in the Prehistory of Japan.

I consider the concentration of dwelling-sites east of L. Biwa to be the earliest ascertainable Ainu boundary-line (fig. 1). A later stage in the settlement of the Ainu is shown by the distribution of the clay idols in fig. 2. There are only isolated cases of objects found that transgress the southern Ainu boundary-line dating from the 3rd cent. The clay idols occur in all the three types of pottery — even, that is to say, in the earliest, the *atsudeshiki*. The spouted clay vessels, on the other hand, are found for the first time in the *usudeshiki* style. The map given in fig. 3 would appear to show, therefore, that during the *jomon* period the Ainu boundary had been moved a step further towards the north-east. Fig. 4, when compared with fig. 3, seems to indicate that the Ainu are followed by a people with an "Æneolithic" culture, for this map marks the distribution of the known "Æneolithic" dwelling-sites, which approximately cover the areas in which "the index fossils" of *usudeshiki*, the spouted vessels, are not found. Consequently, the close of the *atsude*-pottery period and the commencement of the *usude*-pottery period are chronologically comparable with the close of the "Æneolithic" age of South Japan.

I have not been able to find in available literature any mention of "index fossils" of the latest *jomon* period. Nakaya states however that typical pottery of that period is only found in the provinces on the east coast of Hondo, i. e. approximately in those areas that are "shaded" in map 5 (44 Nakaya, p. 158). In these very areas, however, there occur typical Iron Age tombs, although only a relatively few specimens, distributed along the coasts and river-valleys. Light is therefore thrown on the final phase of Japan's Neolithic culture by the *mutsu*-pottery sites, which were inhabited by Ainu contemporaneously with the development of the Iron Age graves filled with *iwaibe* pottery that are found throughout the whole of South Japan, though also in the ancient Ainu areas in North Hondo.

Just as Milne attempted to create out of records of the rising land a chronology of Japan's Stone Age, so can the different phases in the retreat of the Ainu race be used as a basis for dating the various phases in the *jomon* culture. For instance, the line marking the boundary of the *mutsu* pottery in the south-west coincides with the line to which the Ainu were forced to retreat at the beginning of the 8th cent. (6 Bishop, fig. 1). At the same epoch the use of the tombs of the proto-historic period ceased in consequence of a prohibition imposed upon their use in 646, as they were not in accord with the funeral ritual laid down by Buddhism — then recently introduced. As, however, such tombs were built within the *mutsu* pottery area it must be assumed that during this latest era the Ainu had been strongly influenced by the invasions, so that it is hardly likely that the best and most independent *mutsu* pottery work can be ascribed to this last phase of Ainu settlement in Hondo; it is more probable that such products date from this period as those illustrated by Munro (36), fig. 99 and 100 A, which are manifestly imitations of *iwaibe* and *hanibe* pottery.

A further guide to the chronology of the *jomon* pottery is the boundary-line that has been established above as the southern border of the Ainu settlements as late as in the beginning of the 3rd cent. The "index-fossil" of the *usude* pottery, the spouted vessels, are not found so far south, so that it is conceivable that this pottery originated at the earliest during the 3rd cent. A. D. It is impossible however to determine the period when the *atsude* pottery first appeared, but the specimens representing this type in the archaeological material are by no means so much more remarkable than those of the two later types that the *atsude* can be supposed to have existed throughout the period of two thousand years that has been claimed for the Japanese Stone Age on the analogy of the European Stone Age. To make a more or less reasonable guess, I should imagine that the *atsude* period starts at the earliest a century or two before the Christian era.

Accordingly, the history of pottery amongst the Ainu might briefly be told as follows: One or two centuries before the Christian era the Ainu acquire the knowledge of how to make pottery, and the impulses they received evolve within a short time into a fine baroque style. The ornamentation itself is derived, as Nakaya points out, from purely technical conditions (40 Nakaya, p. 3 of the résumé). This applies, for instance, to the chief decorative factor, the textile prints, as also to the applied strips of clay, which are especially typical of the *atsude* pottery, and which manifestly originated in string-nets that encircled vessels intended to be suspended. The handles of the vessels, too, acquire such exaggerated proportions that they are to be regarded as ornaments rather than as essential appendages to the vessels.

After the first violent displays of naive delight in form, the ornamentation gradually grows more simple, until on the best specimens of *mutsu* pottery it is extraordinarily well-balanced and aesthetic. The close of the history of the Ainu in Hondo marks also the termination of the best period of *jomon* pottery. The potter's craft continued, it is true, to be carried on in Hokkaido and the South Kuriles, though with but few reminiscences of the wealth of form and ornamentation that had characterized the past, until finally — probably in the beginning of the 19th century — the Ainu ceased altogether to produce pottery (see Chapter II).

The technical development of the Japanese ceramic art follows along the same lines as the decorative. The *atsude* pottery is thick, reddish-yellow or reddish-brown, occasionally painted red, and the surface is rough from the grains of quartz in the tempering-sand. The *usude* pottery we find already much thinner and better executed. Morse's Omori publication represents a good collection of material dating from this period (34). The average thickness of the 209 potsherds illustrated is 6.3 mm. It is interesting to compare this with the 90 sherds found on the *atsude* dwelling-site at Okadaira, illustrations of which are given, and the average thickness of which is 9.8 mm. (19 Iijima). The sherds in the Stockholm collection from the contemporary Ubayama dwelling-site are of about the same mean thickness, 9.7 mm.

The *jomon* ware reaches its highest standard of excellence during the *mutsu* period. It is polished and blackened on the surface, and in point of density it compares well with the best of the world's Neolithic ceramic products. The late-period products found in Hokkaido and the Kuriles are, on the other hand, poor both in consistency and in burning.

Though the course of development of the Ainu ceramic culture is thus more or less clear to us, its origin is a more difficult problem to solve<sup>1)</sup>. The key to the problem is possibly to be found in the textile-ornamented ware discovered in the famous dwelling-site at Ko in the province of Kawashi, west of L. Biwa. On this site, which has been investigated and described on the initiative of the University of Kyoto, have been unearthed great quantities of objects of archaeological interest, mainly pottery. Uppermost in the deposits of the site was found *iwaibe* pottery, which, as the excavators proceeded downwards, was found to be more and more mixed up with *yayoi*, of which the Stockholm collection possesses a representative number of specimens. Finally the very lowest layers revealed a textile pottery, which, as far as regards its quality, is better than *atsude* pottery, though the ornamentation is apparently simpler and more primitive. How this style of pottery is related to the Ainu product it is now impossible to say, but K. Hamada, who has made a special study of the Ko dwelling-site, conceives the various types of pottery to be stages in one and the same cultural development [12 Hamada, p. (16) and 13 p. (7)]. He even considers the Ainu *jomon* pottery to have evolved out of the textile product of the Ko dwelling-site, so that, according to Hamada, the whole of the prehistoric pottery of the Japanese archipelago had the same origin. It must be left to future research to reveal to us whence this supposed common origin emanated in its turn.

The pottery of the Ainu dwelling-sites thus offers still a number of unsolved problems, but the difficulties in the way of throwing light on the weapons and implements found on these sites will prove still greater. It is very seldom in European literature that any data are given as to the provenance of the objects illustrated, so that it is even difficult sometimes to decide with any certainty whether the archaeological types belong to North or South Japan. E. Akabori has recently endeavoured to draw up some general rules governing the appearance, material and distribution of polished stone axes and arrow-heads, but the material he has available is far too small to yield any appreciable results. In many provinces he has had to work out percentages on the basis of isolated objects, with the result that in many of their details the diagrams and maps are misleading (1, 2 Akabori).

Stone axes with holes for the haft do not occur in the Japanese Stone Age. The type-variation is therefore so small that Akabori accounted for only three

<sup>1)</sup> The fact that an attempt has been made to connect the Nordic-Baltic Neolithic Age with the Ainu culture can only be explained by a complete ignorance of Japan's prehistory on the part of the author in question (48 Schmidt).

types: A, B and C (see fig. 8). A summary of his tables gives the following result, the term North Hondo here denoting the area north of the 3rd century boundary-line mentioned in several passages:

Area	Type			Total	% A B C		
	A	B	C		A	B	C
Hokkaido .....	18	3	16	37	—	—	—
North Hondo .....	120	51	105	276	43	19	38
South Hondo .....	66	6	28	100	66	6	28
Kyushu .....	9	2	1	12	—	—	—
Total	213	62	150	425	50	14	36

The material in respect of Hokkaido and Kyushu is far too slight to provide any reliable landmarks, and the figures from the two halves of Hondo are too similar to permit of any conclusion's being drawn as to the deposits of stone axes belonging to the two supposed cultures.

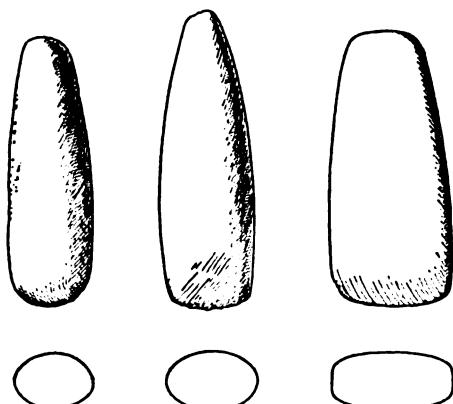


Fig. 8. The three stone axe types (Scale 1/4).

drawn up on the same principle as that regarding the stone axes:

Region	Area Index	Number				Types %		
		Dwelling-sites		Arrow-heads		A	B	C
		Absolute	Relative	Absolute	Relative			
Hokkaido .....	2	28	14	111	56	74	16	10
North Hondo .....	4	289	72	1435	359	42	49	9
South Hondo .....	3	86	28	300	100	18	79	3
Kyushu .....	1	25	25	92	92	—	100	—

The frequency of the three types in the four principal parts of Japan will best seen from the graph given in fig. 9. The figures for Kyushu seem to sufficiently clearly the sole prevalence of the triangular type in the south. Towards the north the frequency of types A and C increases, reaching its maximum in Hokkaido. What these dissimilarities in the types of arrowheads are due to it is impossible to say at present, for there is no chronological difference, all three types often being found side by side with one another on the same dwelling-site. It may possibly be assumed as a working hypothesis that type B is not native to the Ainu area but that it has gradually penetrated to that region from the South Japanese culture, which evolved in Kyushu and South Hondo.

In the course of his investigations Akabori has also gone into the question of the material out of which the arrow-heads have been made. He shows various kinds of volcanic rock species have generally been used, slate being employed only in exceptional cases. Obsidian is preferably used in those regions in which it occurs, but there does not seem to have been any general trade in this article. In Hondo, for instance, obsidian has been used only in the case of a 5 % of the arrow-heads, except in the five provinces east of Tokyo — Sagami, Musashi, Kai, Shinano and Hida — in which the percentage of obsidian rises to 70 on account of the presence of obsidian in that region. It would be interesting to know how the supposed Ainu boundary-lines have affected the general spread of obsidian, but unfortunately Akabori's investigation yielded poor results to enable any opinion to be formed on the point.

There are however two further districts in Japan that are rich in obsidian, one in Central Kyushu, the other in Hokkaido. Akabori's material found in the latter island consists to the extent of 63 % of obsidian, but there is an important difference between the various Hokkaido districts, Milne having found at C

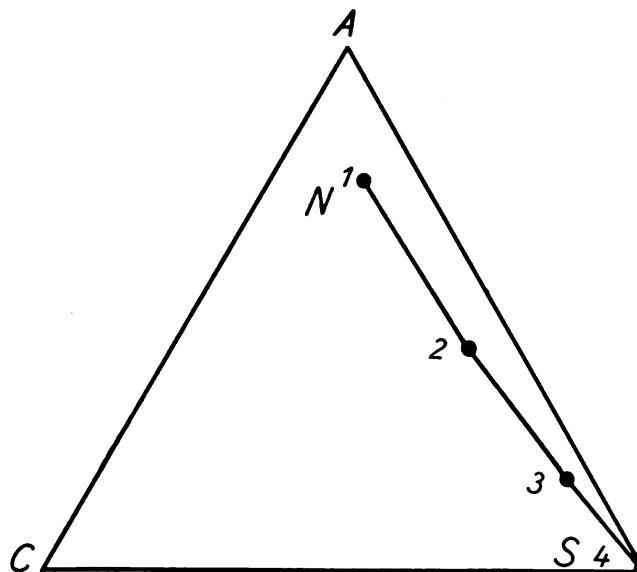


Fig. 9. Diagram showing the relations between the three types of arrow-heads in Japan. 1 = Hokkaido, 2 = N. Hondo, 3 = Hondo, 4 = Kyushu. A = stemmed, B = triangular, C = willowleaf-shaped.

no less than 97 % obsidian arrow-heads, whereas on the dwelling-site at Hakodate only a few were discovered. (31 Milne).

The Stockholm collection contains no less than 434 arrow-heads, but as some of the larger groups seem to have been brought together with the idea of obtaining uniform and similar types they are probably not suitable to serve as a basis for a statistical enquiry. It may however be mentioned as a curious fact that a collec-

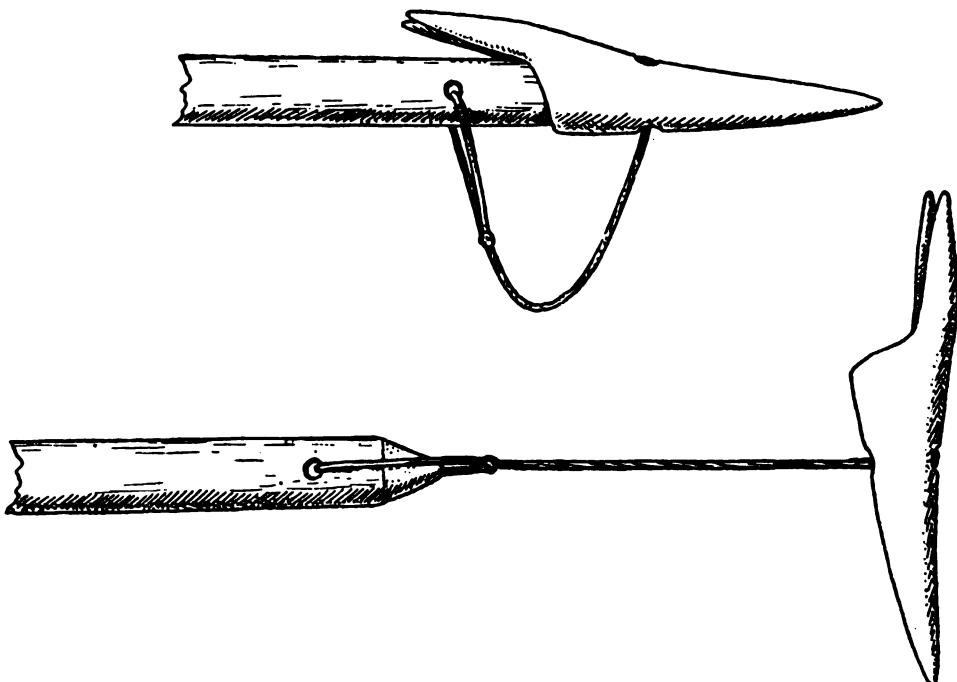


Fig. 10. Reconstructed bone-harpoon found at Numazu, Suruga prov., Hondo. Scale 1/1 (4004).

tion whose provenance is stated as "probably from North Japan" is composed of the following: A = 52 %, B = 43 % and C = 6 %. None of the arrow-heads are made of obsidian. If we compare these figures with those in the Table relating to North Hondo, there would seem to be no doubt that the collection emanates from the northern section of the main island, which is poor in obsidian.

I am not aware of any special investigations into other types of archaeological remains found on the Ainu dwelling-sites. There are in existence however a number of bone spear-, arrow- and harpoon-heads belonging to this culture. Of the latter, special mention may be made of those that are so constructed that they turn sideways in the body of the animal they strike (see fig. 10).

There occur on the Ainu dwelling-sites, and probably nowhere else, a kind of stone clubs and stone swords, called by the Japanese *sekibo*. There are two complete and two fragmentary specimens of this type of weapon in the Stock-

holm collection (Plate V: 3). They are usually of sandstone, slate or some other incompact rock-species, though Munro illustrates a specimen made of obsidian with a decorated handle, found in the province of Mutsu (36 Munro, fig. 65). These stone clubs may be as much as over five feet long and five inches thick (22 Kanda, Plate VII). Munro considers that the shape of the *sekibo* was inspired by bronze objects and is therefore inclined to doubt the accuracy of statements that stone clubs have been discovered on Neolithic dwelling-sites (36 Munro, p. 162). The best-shaped specimens however seem rather to have some relation to wood-carving, and it is worth mentioning in this connection that the Ainu of today possess wooden clubs of a similar kind, which play an important part in their social life.

Another characteristic group of archaeological finds that is represented in the Stockholm collection is the so-called "stone hats", one specimen of which comes from Hokkaido (Plate V: 5). These articles also seem to occur in the supposed Ainu culture all the way from Hokkaido down to Central Hondo. Many guesses have been made as to their use, but no rational solution has been arrived at. Only in one place has the manner of the discovery of stone hats been such as to offer some slight indication of their function, namely, on the Hobi dwelling-site in the province of Mikawa, where two specimens were found lying in tombs, one of them on the skeleton's cranium (26 Koganei, p. 190). In view of the fact that only clothing and ornaments were permitted to accompany the Neolithic folks of Japan into the grave, the most probable interpretation appears to be that which assumes them to be ornaments for the forehead held in position by a fillet. The "stone hats" are made of various kinds of stone, but earthenware specimens have also been found.

Among other objects that have been discovered in the Neolithic Ainu dwelling-sites, and which are represented in the Stockholm collection, are club-heads of stone, called "*raiko*" (Plate V: 1), and a kind of knife-scraper with a knob intended for attaching the implement to the belt.

Besides pottery and tools there are also found, of course, the remains of meals, such as the bones of the bear, stag, badger, ape and wild boar. The dog is the only domestic animal that occurs. A large part of the dwelling-sites consists of shell-mounds, some of which are no less than 20 feet thick. These mounds have been found to contain over 100 species of mollusks and fishes, the latter including a quantity of small fish, which according to Kishinouye must have been caught with a net (24 Kishinouye, p. 359). Of the vegetable kingdom practically nothing has been preserved. Maeda (28, p. 168) and Munro (36, p. 235) mention however the discovery of nuts (walnuts). Whether or not the Neolithic Ainu cultivated crops does not appear to be clearly established. Millstones are, it is true, spoken of as being amongst the objects found, but they can of course have been used for other purposes than grinding corn. In the Stockholm collection, for instance, there is a millstone-shaped piece of lava, from the Ubayama dwelling-site, of so

blistery a structure that it could not possibly have been used for grinding grain. Undoubtedly this object, like many others that have been found and are stated to be millstones, are bowl-shaped grindstones. Munro (35, p. 148) certainly mentions finds of rice in a clay vessel from a shell-mound, but he does not state where in Japan the discovery was made. Bishop (6, p. 551), on the other hand, says with reference to the Ainu's ancestors: "They seem to have derived part of their subsistence from the cultivation of millet . . .", though he offers no evidence in proof of his assertion.

In order to give some idea of the general conditions obtaining on a Neolithic Ainu dwelling-site I take the liberty of quoting H. R. H. the Crown Prince of Sweden's description of the Ubayama dwelling-site, which is the most instructive account that we have in any European language. It was written down in Swedish on the occasion of H. R. H.'s visit to the site, and the following is a translation:

"The dwelling-site is a couple of hundred metres long. Even the surface of the ground is strewn with mussel-shells. The vertical section of the mussel-deposit varied considerably in thickness — between  $\frac{1}{2}$  and 2 metres. In several places the mussel-deposit had been excavated, revealing house-foundations without stones: post-holes lying in oval and a hearth somewhere in the centre. A shallow gutter outside the post-holes. All this sunk into the ground at a depth of about  $\frac{1}{2}$ — $\frac{3}{4}$  m. The hearth sometimes made of a circle of stones, sometimes of large potsherds in an irregular circle. The one that came to light during our excavations consisted of the upper half of a very large pot, in which ashes and burnt clay were found (Plate III: 1). Human skeletons were discovered in several places, lying either on their backs or on their sides in the 'Hocker' attitude<sup>1</sup>). Those that I saw were placed on a higher level than the house-floors. The house-floor where we were excavating and where we found the pot-hearth lay about 1.80 m. below the present surface of the ground. We dug through some square metres of shell-mound covering part of this floor. Mussel- and gastropod-shells were extremely abundant. Sometimes we came across large piles of shells without any layer of earth. In the shell-mound itself there were layers of ashes, some charcoal, a considerable number of potsherds and large pieces of pottery, both ornamented and unornamented, unburnt animal bones and occasionally artefacts: stone axes, worked bone and worked stag's horn."

The greatest interest attaches to the description of the house-foundations. I am not aware of the existence of any similar account, for the methods of investigation in earlier years failed to find any trace of these insignificant relics. It is of interest to note in this connection that at Ubayama there is no question of any such dwelling-pits as are found in Hokkaido and northernmost Hondo. In several places in earlier literature the absence of dwelling-pits in the more southerly parts of Japan is pointed out as indicating an ethnographical difference

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<sup>1</sup>) So-called after the German "Hockergräber" ("hocker" = huddled).

between the earliest inhabitants in Hokkaido and the Neolithic settlers in Hondo. The difference is however due merely to the fact that the climate in the north requires more solidly built dwellings. In this connection it may be pointed out that up to quite a late period the Ainu living in Saghalin and the Kuriles used winter dwellings dug down into the earth side by side with summer dwellings built on the level ground.

The Hocker tombs at Ubayama have many parallels in Japan. In 1923 there were already 900 human skeletons known to have been found on Neolithic dwelling-sites, generally in Hocker graves (26 Koganei). Of these nearly half were discovered in Mikawa, just east of L. Biwa, a hundred or so came from Kyushu, about 50 from North Hondo, and the remainder from South Hondo. The investigations carried out in recent years have undoubtedly very considerably increased our material in the matter of prehistoric skeletons.

There is really not very much of interest in the arrangement of the Neolithic graves. The "hocker" or huddled position on the back, without the skull lying in any fixed direction, predominates, but there are also "hockergräber" in which the skeleton is squatting or lying on its side. It is only in exceptional cases that dead have been placed in an outstretched position. Nothing has been found above ground to mark the graves, nor has anything of the sort probably ever existed, as it often happens that graves are found that have been partly disturbed by later burials, indicating that the people had no means of recognizing and protecting the old cemeteries. In isolated cases excavators have believed they could trace the existence of some rubble-stone screen round the skeletons, and on a dwelling-site in the province of Totomi there was noticed a heap of 30 or 40 stones the size of a fist, which had been placed over the body of the dead, possibly as a magic means of protection against spirits. Moreover, Kokanei (26, p. 179) quotes four cases in which the dead has had a single stone placed on the breast, likewise probably a magical charm.

Neither weapons, nor tools nor household utensils have ever been found deposited in Neolithic graves in Japan. The only objects found are ornaments, such as earrings and mussel-rings, while in one or two cases the head of the corpse has been protected with a clay vessel or a few large potsherds.

One noteworthy detail in the grave finds is that parts of the skeletons are dyed with hematite (red ochre) (26 Koganei, p. 184 et seq.). This applies mainly to skulls and thorax in the case of both male and female individuals. Koganei interprets this phenomenon as being red cosmetic, which has adhered to the bones after the soft parts of the body had decomposed. It seems hardly possible to discover whether the cosmetic formed part of the adornment of the living or whether it was only applied to the body after death with a magical purpose. In any case, I think (contrary to Torii) that it is impossible to prove the manner of painting the body in Neolithic time by studying the colour on the clay idols (26 Koganei, p. 186 et seq.).

Koganei's article, which we have already quoted, gives no details by which the Neolithic graves of South Japan are distinguishable from the Ainu graves of North Japan. The fact that "hockergräber" occur in both cultures does not necessarily imply a common origin, for this burial custom is indeed very common amongst primitive peoples. It is possible that the painting of parts of the skeleton red may offer a clue to a difference between north and south, seeing that, at any rate up to 1923, no such practice had been discovered anywhere south of Mikawa province. The finds are however too few in number to permit of any definite conclusions' being drawn from them.

A phenomenon of great interest is the deliberate deformation of the teeth observed in skeletons in a number of graves. In 1923 a total of about 100 examples of this were known, in some cases the teeth being symmetrically extracted, in others filed into the shape of a fork (25 Koganei). The phenomenon has been observed on the skeletons of both sexes, and the operations appear to have taken place just before the individuals became adult — undoubtedly forming part of some initiation rites. The nearest equivalent to this practice is found amongst various native tribes in the isle of Formosa.

Neolithic skeletons with deformed teeth have been found both in North and in South Japan, though in 1923 no cases were as yet known to have existed south of Bitchu province in South Hondo. In North Hondo, of two adjacent dwelling-sites the one might yield craniums with a deformed denture and the other have no examples of the phenomenon whatsoever. Koganei offers no clues to enable us to judge whether or not this may possibly be due to a difference in the date of the dwelling-sites. It is certain that skulls with deformed dentures have been found on two *yayoi* dwelling-sites just east of L. Biwa.

Naturally, it is the skeletons themselves that offer by far the greatest interest in connection with the graves. Unfortunately there is no available account of the latest researches into the subject, the reports on them being for the most part inaccessible to Europeans in papers written in Japanese. But this much may be taken for granted, that the anthropological problems in Japan are still far from solved. The nature of these problems may be summarized in the two following questions: Whence came the Ainu? and Of what is the Japanese race composed?

With regard to the question of the origin of the Ainu, I refer the reader to what I have said above about the earlier Ainu dwelling-sites. This question has given rise to a vast amount of literature, containing innumerable conjectures, in which hardly a people in the world has not been considered in the effort to discover the progenitors of the Ainu. An excellent review of these manifold theories has been given by Professor Y. Koganei, the Nestor of Japanese archaeology, in a paper published in 1927 (27 Koganei). He sums up the actual results of all this theorizing in the following words: "So weit die bisher errungenen tatsächlichen Resultate hinreichen, kan man nur sagen, wie ich es schon

getan habe, dass das Volk der Aino entsprechend seinem gegenwärtigen Wohnsitze eine *Rasseninsel* bildet". — Since Koganei's paper was written, Sternberg has brought forward as evidence on the point a number of ethnographical factors that have previously been almost entirely overlooked (54 Sternberg). Thanks to these researches it seems that relatively certain proofs have been obtained establishing the Ainu's connection with the peoples of the East Indian archipelago.

As to the origin of the Japanese race, this question is still wrapped in deep obscurity. The official conception of Japanese history is based on religious grounds; according to it the Japanese, and in particular the Imperial House, are of divine origin. Japanese scientists are accordingly bound hand and foot by this conception of the race's history, which has been dictated by national considerations, and they thus have to go back to ancient Japanese literature for their sources of information. Of these literary works may be specially noted: Kojiki (The Tale of Ancient Events), written in 712 A. D., and Nihongi (The Story of Japan), written down eight years later. Both these works have come into being for the purpose of championing the Imperial House and the illustrious origin of the great lords' families, for which there existed practically no proofs, so that evidence had to be constructed — for the Kojiki with the aid of Japanese folklore, and for the Nihongi with the aid of quotations from Chinese authors.

The historical essence of these writings thus consists only of the information obtainable about the period immediately preceding the date of their composition. The true source of the writings on Japanese history is therefore to be found in Chinese chronicles, which commence about the beginning of our era to pay ever-increasing attention to the course of development in Japan. At this epoch, however, the Japanese were already settled in North Kyushu and South Hondo, and the question of whence they came has consequently to be answered by archaeology, anthropology and linguistic research acting in concert, without recourse to the early historians.

There can be no doubt that during the early historical period and the proto-historical Iron Age the Japanese absorbed a very large number of immigrants from China and Korea. This is confirmed partly from historical sources and partly by the fact that Japanese civilization has borrowed very largely from Chinese culture, in most cases by way of the Chinese province of Lo-lang in Korea. This applies both to material culture in the form of metals and metal objects, horses, grain-cultivation and the shapes of clay vessels, and to intellectual culture in the form of borrowed words, calligraphy (not later than in the beginning of the 5th century), the design of graves, and religion (Buddhism at the close of the 6th cent.).

The considerable number of Korean words in Japanese has given rise to the misconception that the Japanese came from Korea and are related to the Koreans. The borrowed Korean words that are found in Japanese are however of such a

kind as to afford evidence of a fairly high standard of culture existing in the people that has borrowed them. The words necessary to a primitive culture, such as the names of the parts of the body, natural phenomena, the conditions of family life, etc., appear, on the other hand, to have kinship with Austronesian languages (30 Matsumoto). It is possible, therefore, that the bulk of the Japanese, as well as the Ainu, come from the South by way of Formosa and the Riu-Kiu islands. Hamada (13, p. 7 et seq.) assumes the ancestors of the Japanese to be an Ainu-like race whose representatives he believes he has found in connection with the textile pottery of the above-mentioned Ko dwelling-site. Hasebe (18, p. 18 et seq.), who investigated the anthropological material from Ko, considers that these skeletons are comparable as far as the anatomical structure is concerned with those found in Neolithic Ainu dwelling-sites, though the structure of the skull does not correspond to the shape of the present-day Ainu's head. How far the crania of the Ainu of today conform to the crania found in the Neolithic Ainu dwelling-sites is not clear from the literature on the subject written in any European language, and has probably not been definitely established. Nor do the Ainu appear to be anthropologically so uniform a race as had at one time been supposed. About two-thirds of the Ainu in Hokkaido apparently belong to a relatively tall race with a cephalic index of 75—76, while the remainder are shorter with an index of 79—80 (29 Matsumoto, p. 72). This of course makes it extremely difficult to determine which prehistoric skeletons are to be considered to belong to the Ainu's direct ancestors. Koganei maintains that the Ko skeletons do not belong to the ancestors of the Japanese but to those of the Ainu (25 Koganei, p. 446 et seq.), and should his view prove correct, then the pottery found in the lowest deposits of the Ko site, once supposed to have been the seed out of which both the *yayoi* and the *jomon* pottery developed, would prove to be merely an early stage in the history of the Ainu pottery dating from a period earlier than the *atsude* period — a period during which the Ainu would consequently have lived actually west of L. Biwa. Should, on the other hand, the theory be confirmed which Hamada based on archaeological speculation, and according to which an Ainu-like people form the nucleus of the Japanese people, then this similarity must have been confined to the anatomical structure, as otherwise the gap between Ainu and proto-Japanese that had already arisen during the Neolithic era would be hard to account for, and the striking difference existing between the biochemical racial indices of the peoples of the present day (Ainu in Hokkaido = 0.98, in Saghulin = 0.78, Japanese = 1.57 (10 Furuhata) would be inexplicable, if the similarity between Ainu and proto-Japanese had in fact been a similarity of race.

We see from the above how the whole question of the origin of the Japanese is still wrapt in obscurity. It is essential that the whole of the Japanese prehistoric osteological material should be thoroughly and uniformly reinvestigated before the problem can be profitably discussed. Nor is the course of the Neolithic and

"Æneolithic" eras in South Japan satisfactorily established, although the University of Kyoto has since 1917 carried out extensive and important investigations and published the results. The most notable of these investigations is that carried out on the Ko dwelling-site, and which has already been mentioned in this paper. Unfortunately the various deposits on the site have become so intermingled through centuries of ploughing that it has not been possible to establish the stratigraphy of the dwelling-site. This is so much the more regrettable as the only finds of typical *jomon* pottery (two sherds in the *atsudeshiki* style) discovered on a dwelling-site in South Japan emanate from Ko. Hamada (13, p. 4) writes of this find: The only appropriate theory is that this unusual variety was imported here from some other place where such a different ware was manufactured by perhaps a different tribe or settlement of the Neolithic people of the same period. — It now seems certain that this other tribe was Ainu, and no doubt similar finds will eventually connect up the chronology of the prehistory of the proto-Japanese with the history of the Ainu.

There is at Ibusuki, in Satsuma, the most southwesterly province in Kyushu, an important Neolithic dwelling-site, which has likewise been investigated by Kyoto University (14 Hamada). It lies at Mt. Kaimon-dake, a volcano that has twice covered with ashes the deposits of cultural periods existing on the site. The last covering of ashes apparently dates from 874 A. D., when the last known eruption of Kaimon-dake took place. These two dwelling-site deposits appear so far to be the only chronological data existing in the Neolithic history of South Japan and are therefore worth describing in some detail. The lower deposit contains fragments of clay vessels, the apertures of which are turned up to form lobes, somewhat like the vessel illustrated in Plate III: 2. The ornamentation consists of incised curves, for the most part applied beneath the mouth of the vessel. In very rare cases the incised decoration has been supplemented by textile ornamentation. No stone implements were found in this deposit.

The upper deposit, on the other hand, contains typical *yayoi* pottery, though there is also a ware decorated with impressed rings and lines, the design generally being applied to an imposed clay band running round the vessel. The latter style of pottery appears to represent the last traces of a ware with impressed ornamentation native to South Japan, which can be studied on the neighbouring Idzumi dwelling-site (50 Shimada, Hamada). It is at present impossible even to attempt to define the relationship between those pottery types of South Japan that are not in the *yayoi* style. The relationships of the *yayoi* ware however are better understood. Both in material and form it borrows so much from the Neolithic and "Æneolithic" culture of Korea that the connection is unmistakable. The emergence of the *yayoi* ware signifies therefore an initial cultural affinity with the mainland, which can subsequently be followed up right through the history of Japan. What influence this first appearance of the *yayoi* pottery has on the tool industry it is not possible to determine from the Ibusuki site, for only a

couple of roughly hewn tools were found in its upper layer. The influence of Korean culture on the other hand is clearly traceable in the tools found on the Okamoto site, in Shikuzen, the most northerly province of Kyushu (51 Shimada). This dwelling-site proves to belong to the "Æneolithic" era, as not only bronze daggers and mirrors have been found there but also fragments of casting-moulds for making bronze daggers. The majority of these finds have been discovered accidentally, and only one bronze dagger and a few fragments of mirrors have come to light in the course of the scientific examination of the site. It seems however that the connection of the rest of the objects with the dwelling-site is beyond any shadow of doubt. Most of the mirrors date from the earlier Han dynasty and were undoubtedly imported via Korea. The bronze daggers may also be attributed to the same epoch, the dwelling-site consequently dating from the period around the beginning of the Christian era, though at that date the common use of stone implements was by no means abandoned. Obsidian is found in large quantities, as also a number of crescent-shaped slate knives with two holes in the back, though most of them were found accidentally. These knives however are likewise borrowed from the Neolithic culture of Korea.

At the epoch when the Okamoto dwelling-site was inhabited, Korea was in close contact with Chinese culture, for in the year 108 B. C. a Chinese colony, Lo-lang, had been established in Korea. Thanks, then, to the connection between Japan and Korea, the attention of the Chinese came eventually to be attracted to Japan, the Chinese name for which was Wo. Deputations are sent to and are received from Wo by Chinese Emperors, and peculiar features of Japanese life are recorded in the Chinese chronicles. Thus, in the later Han chronicles the Japanese are described as a Neolithic race, which of course is quite accurate if such bronze objects as the finds at Okamoto are regarded merely as a not very significant advance on Neolithic culture. The Wei and Chin chronicles (3rd and 4th centuries), on the other hand, relate that the people living in Wo used iron. In the course of my enquiries into the age of Ainu culture I believe I have been able to establish this fact, i. e., that the "Eneolithic" culture of the South Japanese must have come to an end not later than in the course of the 3rd cent., at any rate in the northern parts of the proto-Japanese area, being followed by the *kofun* period (*kofun* = Long barrows). The chronological landmarks in Japan's early history might be summarized as follows:

Period	400	300	200	100	Birth of Christ	100	200	300	400	500	600	700
Proto-Japanese	Neolithic, Aeneolithic, The Kofun epoch Ko (?) Ibusuki, Okamoto											
Ainu									Atsudeshiki, Usudeshiki, Mutsushiki			

The intercourse of the proto-Japanese with the mainland implies not merely an improvement in their pottery and tool industry, but that their whole conduct of life was reorganized upon the introduction of agriculture. This means, as far as archaeology is concerned, that the very existence of archaeological remains is affected. An agricultural population cannot huddle together within such a confined area as fisherfolk or a hunting people can do, and consequently it never leaves behind it such concentrated waste-deposits. Moreover, the cultural deposits that accumulate round the dwellings of an agricultural people run the risk of being destroyed by agricultural implements in a manner quite different from cultural deposits on a fisherfolk's dwelling-sites, even though these deposits, after they have once accumulated, may have chanced to come under the plough. Consequently, extremely few dwelling-site remains dating from the Japanese Iron Age are known, the antiquities specially associated with that era taking the form of tombs of various kinds constructed on the model of those on the mainland (8 Conrady).

As early as during the *Æneolithic* era the Japanese burial customs underwent a change as a result of continental influence. On the Okamoto dwelling-site and a number of other sites in the most northerly districts of Kyushu — the region that lies closest to Korea — have been found double urns of the length of a man, in which burials manifestly took place. It is certainly only in exceptional cases that any skeleton remains are extant, but the very length of the urns makes it probable that the bodies of the dead were placed in them in an outstretched position, in contrast to the "Hockergräber" of the Neolithic Age. One of the ten urn-tombs found at Okamoto actually contained a bronze dagger — a feature that distinguished this type of grave from the dwelling-site tombs of earlier ages, which contained no relics except ornaments. Shimada and Hamada, who examined the graves, believe that the introduction of this type of grave received its impulse from Korea, where similar graves have been discovered (51, p. 19). The double urns were however seldom in use except within a limited area in N. Kyushu. Elsewhere cist-tombs are used. It is this form of grave, derived from Korea, that subsequently exercises a predominating influence on the development, according to Shimada and Hamada (51, p. 22): "The development of sepulchres in Japan can be said not to be the continuation of urn-burial, but of the evolution of cist-tombs. It evolved gradually into stone sarcophagi, solid and joined blocks, hand in hand with the development of mounds into huge tumuli. Then stone chambers appeared, probably through continental influence. Urn-burial was in fact an ephemeral phenomenon in a restricted locality and for a limited time. The occasional appearance of clay sarcophagi in a later age, derived from the stone coffin, can be regarded as an atavistic revival of the double urn of an earlier period".

This is hardly the place to enter into a discussion of the different forms of Iron Age graves, but the above quotation may suffice to throw light on the course of

development of the various forms. As the Stockholm collection contains a very representative collection of sepulchral pottery dating from the Iron Age, *iwai-beshiki*, I will say a few words on the subject. The prototypes of the *iwaibe* pottery, like those of the *yayoi* pottery, were introduced from Korea, where they occur abundantly in the graves. In Korea the vessels are often ornamented with impressed designs, a feature that distinguishes them from the Japanese *iwaibe* ware. There are, moreover, in the Stockholm collection some good examples of the Korean *iwaibe* pottery — "pathangi". The characteristic feature of the *iwaibe* pottery is the uniform, clear grey colour and the clear-cut marks from turning on the potter's wheel, which are not removed in *iwaibe* pottery, in contrast to those on *yayoi* pottery, which, after turning, have often been worked over, probably with small hard brushes.

At any rate in the early days, the *iwaibe* vessels were used only as sepulchral gifts, so that the forms of clay vessel acquired a special character and were often useless for practical purposes. The *yayoi* pottery, which in the Iron Age is called *hanibeshiki*, is still in common use. An extremely rare and fortunate find in a cave at Osakai, in the province of Etchu in Central Hondo, shows, however, how the *iwaibe* ware gradually usurps the place of the *hanibe* or *yayoi* pottery as an article in common use. Although a number of human skeletons have been found in the cave, there is no doubt that it was only used as a dwelling. When the cave was investigated in 1918, no less than six different cultural layers were observed, separated by deposits of stones that had fallen from the roof. Unfortunately the original account of the find has not been accessible to me (49 Shibata), but there is a good account of it in Koganei (25, p. 457 et seq.). According to him the contents of the cultural deposits are as follows:

- I. Recent objects.
- II. Later *iwaibe* pottery.
- III. Earlier *iwaibe* pottery and occasional *yayoi* sherds.
- IV. *Iwaibe* and *yayoi* pottery.
- V. *Yayoi* pottery, stone axes, arrow-heads, objects made of bone, mussel rings, and the point of a rusted ironknife.
- VI. *Jomon* pottery (*atsudeshiki*).

Beneath the sixth course there is only sterile sea-sand.

The most productive places in which *iwaibe* pottery is found are however the tombs. According to Hamada (15) *iwaibe* pottery occurs only in the 5th, 6th and 7th century tombs. For data concerning other sepulchral gifts and the chronological history of certain forms of graves the reader is referred to Hamada's instructive diagram given in fig. 11. Apart from the sepulchral gifts enumerated in the diagram should be mentioned beads, of which there are hundreds. A case in point

is a tomb investigated by W. Gowland at Shiba, in Kawachi prov., in which were found 1108 beads of dark blue glass, silver, clay, steatite and jasp (11 Gowland, p. 477). Most of the beads are round (*marudama*), others tubular (*kudatama*). Of peculiar interest are the so-called *magatama* or comma-shaped beads (see

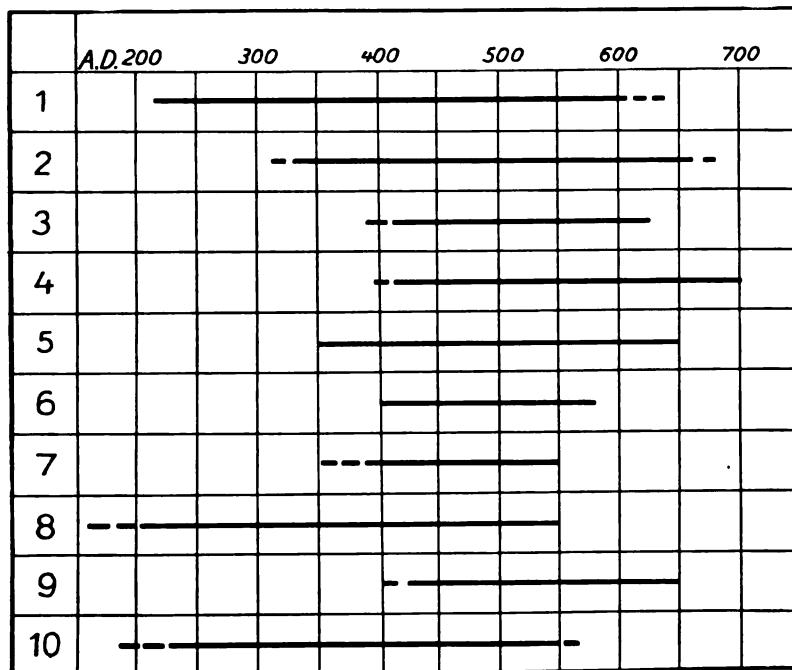


Fig. 11. Diagram showing the duration of certain phenomena in Japanese Iron-Age graves. 1 = Burial-mound, 2 = Stone chamber, 3 = Stone sarcophagus, 4 = Pottery as the buried object in the chamber, 5 = Ring-pommeled sword, 6 = Gold ear-pendants, 7 = Gilt bronze diadem, shoes and fish-pendants, 8 = Mirror, 9 = Horse trapping as the buried object in the chamber, 10 = Sword with antler ornaments. (After Hamada & Umehara 15, p. 21).

Plate V: 4), three specimens of which were found in the Shiba grave. The *magatama* beads are no doubt substitutes for animal-claw or animal-tooth amulets, being one of the few forms of antiquities that Korea has borrowed from Japan; in fact, the only region, except Japan, in which they are found is South Korea (17 Hara, p. 40). Nevertheless, it is not yet definitely established that the *magatama* beads have really been evolved in Japan. One point worth observing is that glass occurs in graves of the Iron Age in the form of beads. These have doubtless been imported from China, where even during the earlier Han dynasty glass objects of a simpler kind, such as the beads in question, had begun to be made. Indeed, there were actually found on the Okamoto dwelling-site beads of

glass and a few fragments of a Chinese celestial symbol made of glass (*pi*). The Chinese first began to make glass vessels during the Wei dynasty, but the earliest glass vessels that have been found in Japan — in Imperial tombs dating from the 5th and 6th cent. — were imported from Western Europe, no doubt via China (16 Hamada & Umebara, pp. 16—17).

Our knowledge of ancient cultures that is based solely on the contents of early graves is necessarily one-sided, seeing that important aspects of the material culture of the people under review are hidden from us. What we know of the culture of the Japanese Iron Age, which has left us so little in the way of ancient dwelling-sites, would likewise be almost unintelligible, were it not richly supplemented by accounts in the earliest Japanese literature of the life of the Japanese during the last centuries of the Kofun period. Having now however reached the point at which original texts commence to throw light on the history of Japan, my task is accomplished. My brief summary of Japanese antiquities has unfortunately been all too often punctuated with notes of interrogation. Their number is perhaps excessive owing to my regrettable ignorance of the Japanese language. I almost hope that this may be the case, for it might perhaps induce one of Japan's own experienced archaeologists to take up his pen and give Western students of cultural history an eagerly awaited, comprehensive review of Japan in ancient times.

#### A BRIEF ACCOUNT OF THE PREHISTORIC COLLECTIONS BROUGHT FROM JAPAN BY H. R. H. THE CROWN PRINCE.

Singularly fortunate circumstances have brought it about that the numerous minor collections of Japanese antiquities presented to H. R. H. the Crown Prince together form a collection that is very representative of the prehistoric cultures of Japan, a fact of which the following table affords ample testimony.

In order to show how the finds are distributed throughout the Japanese islands I have numbered the Japanese provinces and have attached to the name of each province in the Table the successive numbers thus obtained. The numbering starts in the north and ends in the south. Provinces 1—10 are situated in Hokkaido, 11—30 in Hondo north of the Ainu boundary in the 3rd cent. A. D., 31—67 in Hondo south of that boundary and in Shikoku, and 68—78 in Kyushu. It will be seen from the numbers appearing in the Table that North Hondo in particular is well represented, finds having come from 13 out of 20 provinces. The most poorly represented is Kyushu, with 9 objects only. The Hokkaido finds are of only moderate interest, especially as the island's ancient Ainu pottery is not represented at all.

The *jomon* pottery, on the other hand, is represented in all its three stages of development. There are no less than 7 complete vessels representing the most

No.	Name	Number of sites	Ceramic				Tools of stone				Bone-implements		Total				
			Jomon		Yayoi		Iwaike	Clay sculptures	Axes and chisels	Sekibos	Knives and spear-heads	Arrow-heads					
			Whole	Fragments	Whole	Fragments											
—	North Japan .....	?	—	—	—	—	—	—	6	—	3	35	4	—	2	50	
—	Hokkaido .....	?	—	—	—	—	—	—	—	—	—	4	—	—	—	4	
1	Kitami .....	1	—	—	—	—	—	—	—	—	2	19	—	—	—	21	
4	Kushiro .....	1	—	—	—	—	—	—	—	—	3	2	—	—	—	5	
6	Ishikari .....	1	—	—	—	—	—	—	1	—	2	3	—	—	—	6	
8	Iburi .....	1	—	—	—	—	—	—	1	—	—	1	3	—	—	5	
9	Shiribeshi .....	1	—	—	—	—	—	—	—	—	2	6	—	—	—	8	
11	Mutsu .....	4	4	—	—	—	—	—	1	2	—	—	—	—	1	8	
12	Ugo .....	2	—	—	—	—	—	—	—	3	—	—	3	—	—	6	
13	Rikuchu .....	≥ 2	—	—	—	—	—	—	—	2	—	7	61	2	—	72	
14	Rikuzen .....	4	—	11	—	—	—	—	—	—	—	—	25	2	10	48	
15	Uzen .....	4	1	—	—	—	—	—	—	1	—	1	4	1	—	8	
16	Iwashiro .....	2	3	—	—	—	—	—	—	2	2	—	2	2	—	1	12
19	Shimotsuke .....	2	—	—	—	—	—	—	—	1	—	—	5	—	—	6	
21	Kotsuke .....	1	—	—	—	—	—	1	—	—	—	—	—	—	—	1	
22	Shimofusa .....	7	1	16	—	—	—	—	—	1	1	—	—	2	1	—	22
24	Musashi .....	6	—	—	—	—	—	—	—	7	—	—	—	—	—	7	
26	Shinano .....	4	—	—	2	—	—	—	—	2	—	1	—	—	—	5	
27	Kai .....	2	—	—	—	21	—	—	1	—	1	—	2	—	—	25	
28	Suruga .....	1	—	—	—	—	—	—	—	—	—	—	—	11	1	12	
34	Mikawa .....	2	—	—	2	1	—	—	—	1	—	—	6	1	—	3	14
35	Mino .....	1	—	—	—	—	—	—	—	—	—	—	2	—	—	2	
37	Owari .....	1	—	—	—	5	—	—	—	—	—	—	—	—	—	5	
42	Yamashiro .....	2	—	—	—	—	28	—	—	—	1	21	3	—	—	53	
43	Yamato .....	3	—	—	1	—	1	—	—	—	—	—	—	—	47	49	
45	Kawashi .....	2	—	—	3	3	—	—	—	—	—	36	1	—	—	43	
49	Izumi .....	1	—	—	—	—	—	—	—	—	—	32	—	—	—	32	
56	Hoki .....	?	—	—	—	—	—	—	—	—	—	165	—	21	186		
71	Buzen .....	1	—	—	1	—	—	—	—	—	—	—	—	—	—	1	
72	Bungo .....	1	—	—	—	—	1	—	—	—	—	—	—	—	—	1	
75	Higo .....	1	—	—	—	—	—	—	1	—	—	—	—	—	—	1	
77	Satsuma .....	3	—	—	3	—	—	1	—	—	—	2	—	—	—	6	
Total		30	> 65	9	27	9	33	31	1	32	4	23	434	23	22	76	724

recent group, the *mutsushiki* type, as well as some fragments from the provinces of Mutsu, Rikuzen, Usen and Iwashiro. *Usudeshiki* is represented by a few sherds from the dwelling-sites at Kotehashi, Kosaku and Yashiki, all in the province of Shimofusa.

The best represented is the *atsudeshiki* type, with some fragments from Soya, in Shimofusa, as well as with the interesting material from Ubayama, in the same

province, just east of Tokyo, H. R. H. the Crown Prince having himself been present when these finds came to light. Thanks to the skilful and intelligent labours of Mr. C. H. Gustafson, the technician of the Museum of Far Eastern Antiquities, it has been possible to construct out of the potsherds collected four magnificent vessels (Plates II and III: 2, 3). Another fine piece is the top of the

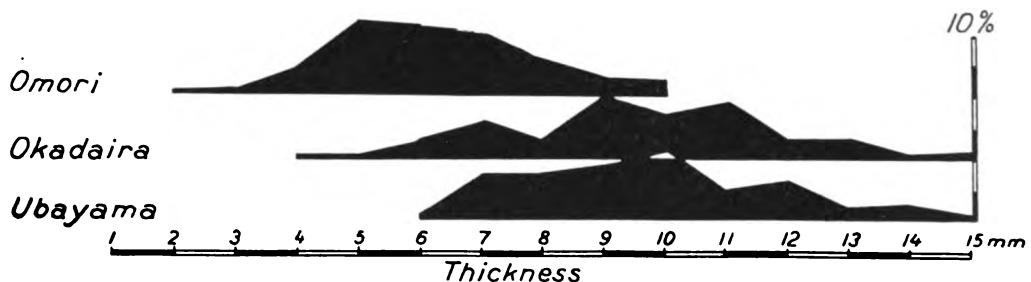


Fig. 12. Diagram showing the thickness of the pottery on three Neolithic dwelling-sites in Japan.

clay vessel mentioned in the Crown Prince's account of the dwelling site, and which was used to encircle a hearth (Plate III: 1). Besides these larger ceramic objects there are between 400 and 500 potsherds, the great majority of which are decorated with cord or textile impressions and applied strips of clay. The average thickness of the ware is 9.7 mm. It would be interesting to be able to compare the thickness of the Ubayama pottery with that of the ware found on *usude* and *mutsu* dwelling-sites. For a comparison between the Ubayama ware and the Okadaira ware (19 Iijima), which latter is likewise *atsude* in character, shows that an average thickness of scarcely 10 mm. is characteristic of at any rate that stage of the *atsudeshiki* which is represented by Ubayama and Okadaira, seeing that the average on the latter dwelling-site proved to be 9.8 mm. However, the amount of comparative material available is small, for only in the case of one other dwelling-site, that at Omori, has so detailed an account been published as to permit of an appreciable number of specimens being studied (34 Morse). The dwelling-site is *usude* in character and the average thickness of the ware is only 6.3 mm. The proportions in which the different thicknesses occur will be seen from fig. 12 above.

A thorough examination of a body of *mutsu* material would undoubtedly result in the average thickness of the ware being scaled down still further, as is evidenced even by the 12 vessels or fragments of vessels preserved in Stockholm, and the mean thickness of which is 5.5 mm.

The thickness of the ware in the clay vessels depends of course to some extent upon the size of the vessels, and the largest vessels dating from Japan's Neolithic era occur on the *atsude* dwelling-sites; nevertheless, the chief cause of the reduction in the thickness of the ware is the increasing technical progress achieved in the manufacture of clay vessels.

The collection from the Ubayama dwelling-site includes, besides pottery, bones and mussel shells, a roughly made axe, an axe of type A (see the preceding chapter, p. 32) and a square-edged chisel. Further, there are two points of a deer's horn with the tip cut off and smoothly polished sides. The severed tip is certainly reminiscent of deer's horn points found in the Danish shell-mounds, and which have manifestly been used in working on flint, but the heavy abrasion of the sides exhibited by the Japanese deer's horns can hardly have arisen as a result of working on obsidian or other Japanese substitute for the Danish flint. Rather, the deer's horn points may possibly have been used as modelling sticks in the potter's trade.

The other finds from North Japan, such as arrow-heads, stone hats and *sekibos*, have already been dealt with in the preceding chapter.

Of the objects in the collections brought from South Japan the pottery is the most interesting. As is seen from the Table, the *yayoi* pottery is well represented, *inter alia* by 3 complete and a number of fragmentary vessels taken from the important dwelling-site at Ko, in Kawashi. The earlier stamp-ornamented ware is, on the other hand, only represented by one sherd from the Kagamigaike dwelling-site, in Satsuma prov., whence two *yayoi* sherds have also come. So far as can be judged from these three fragments, the Kagamigaike dwelling-site must have been contemporaneous with the uppermost deposit on the Ibusuki dwelling-site, which was mentioned in the preceding chapter.

Of the few Japanese "Æneolithic" bronze objects in existence the Crown Prince's collection possesses of course no representatives, but the Iron Age is represented partly by some *iwaibe* vessels found here and there and also by a whole collection of vessels from a rock-grave at "Yawato, near Kyoto", though probably in Yamashiro, a province bordering on Yamato, the cultural centre of the proto-historical period. From Yamato itself there is a collection of beads, two of which are *magatamas*.

## II.

### THE PREHISTORIC FINDS BROUGHT HOME BY STEN BERGMAN'S EXPEDITION TO THE KURILES IN 1929-30.

Starting from Hokkaido, the northernmost of the principal islands of Japan, the volcanic islands of the Kuril group run in a curve up towards Kamtchatka. There are 31 in all, mountainous and inhospitable, and possessing a foggy and stormy climate.

So far as is known at present, the aborigines were Ainu, but there are no chronological landmarks to enable us to determine the epoch in which they first settled there. It may have been in conjunction with the expansion of the Japanese beyond the boundaries of the regions inherited of old by the Ainu in the islands of Japan, though the extraordinary abundance of fish in the Kuril water-

courses may possibly have induced them to settle there without any extraneous compulsion.

It is remarkable how little the prehistoric development of these islands has succeeded in interesting research students. Recent Japanese literature may, it is true, contain some account of the prehistoric culture of the Kuriles, though it does not seem very likely, since such works as I have had access to afford no indication thereof. It is however certain that European literature has utterly neglected the prehistoric remains on these islands, apart from the few observations on the subject to be found in, for instance, Milne (33) and Torii (56). Under such circumstances it is clear that the Neolithic collections brought home by the Swedish zoologist and traveller Sten Bergman from his scientific expedition to the Kuriles in 1929—30 will prove to be of exceptional importance in adding to our scant knowledge.

With regard to the circumstances attending the finds and the origin of the collections, Bergman gives the following particulars:

"The archaeological material which I have brought home from the Kuriles comes from the islands of Kunashiri and Yeterofu (Iturup). Only three clay vessels are from Kunashiri; all the rest come from Yeterofu, the island on which I had my headquarters during my scientific expedition in 1929—30.

The material from Yeterofu emanates chiefly from two localities, the villages of Shana and Rubetsu, which lie on the west coast of the island at a distance of about 23 kilometres from one another. The richest archaeological site was Rubetsu. The present village of Rubetsu is situated on a river of the same name only a few hundred metres from the shore of the Sea of Okhotsk and only a few metres above sea-level.

Southwest of the village and immediately contiguous to it there are open sands, which rise here and there to form low sand-dunes. Among these and along the level sands lie numerous Stone Age dwellings. All over this area it is possible to find fragments of clay vessels as well as various kinds of Stone Age weapons. It is in these two kinds of sandy places that I have come across practically all the fragments of clay vessels that are marked Rubetsu. Frequently the sand here shifts under the severe storms, and then parts of vessels and arrow-heads etc. are occasionally revealed, and one can find them merely by looking for them on the surface of the ground.

In this area of shifting sand there are firmer spots of ground, the ancient dwelling pits. These pits are also composed of sand, but it is mixed up with earth and decomposed matter, and is thus better able to withstand the storms. When it rains very hard, the sides of these pit ruins, which often project out of the surrounding soil, corrode; it often happens however that the sand buries them again entirely. I have found in these old pits a great many parts of clay vessels, as well as a few almost complete vessels. Here too lay arrow-heads etc. The fragments and the halves of vessels have been discovered without exception by myself and my

taxidermist. The few entire vessels I have got from people living in the village of Rubetsu, who had found them on sites similar to those I had excavated there.

Of the arrow-heads etc. I myself found a small number, but most of them I bought or obtained from people who had themselves come across them in the same area. Two human skulls were found on the same archaeological site by a Japanese. They lay near the surface of the ground, but the ground changes its contours owing to the shifting sands.

The material marked Shana I obtained by purchase from a person who has lived all his life in the village of Shana and who himself got the collection together. He collected the objects on ancient dwelling-sites in the neighbourhood of Shana, and there cannot be any doubt as to their authenticity, as the person in question collected them with keen interest.

Between the village of Shana and the Bay of Arimoi about two kilometres distant in a S. W. direction, the coast consists of a plateau separated from the sea by a cliff 30—50 metres high. Along the edge of the plateau there are a number of ancient dwelling-sites, consisting of circular pits similar in form to a wash-basin and varying in diameter.

Along the seashore in a northerly direction, the coast between Shana and the village of Nayoka is of a similar character. Here, too, along the edge of the plateau there are a very large number of ancient dwelling-sites.

Particularly in the area where the plateau borders Nayoka Bay there has manifestly been a large Stone Age village. Here the regularly formed pits, which are all that is left of the collapsed underground dwellings, lie very close together. They are absolutely untouched, and were they excavated they would undoubtedly yield rich results.

From Nayoka continuing north along the coast, pits of regular shape are to be found here and there, relics of Stone Age dwellings, all of which appear to be absolutely undisturbed. They are situated partly along the edge of the plateau itself, and partly on the banks of some stream that flows out into the sea."

\* \* \*

The collection of antiquities brought together by Bergman is now preserved in the Museum of Far Eastern Antiquities in Stockholm. The size of the collection will be gathered from the following table:

Locality	Clay vessels		Arrow- and spear-heads	Knives	Axes and chisels	Scrapers	Various	Total
	Whole	Fragments						
Rubetsu..... 11270	6	375	150	6	1	—	2	540
Shana..... 11271	6	—	687	36	29	35	5	798
Kunashiri... 11272	3	—	—	—	—	—	—	3
<b>Total</b>	<b>15</b>	<b>875</b>	<b>837</b>	<b>42</b>	<b>30</b>	<b>35</b>	<b>7</b>	<b>1341</b>

The great majority of the finds consist of arrow-heads, fashioned with remarkable skill out of various volcanic species of rock, including obsidian, which latter has been used in the case of 13 % of the arrow-heads found on the Rubetsu dwelling-site and in the case of 15 % at Shana. The types of heads vary consider-

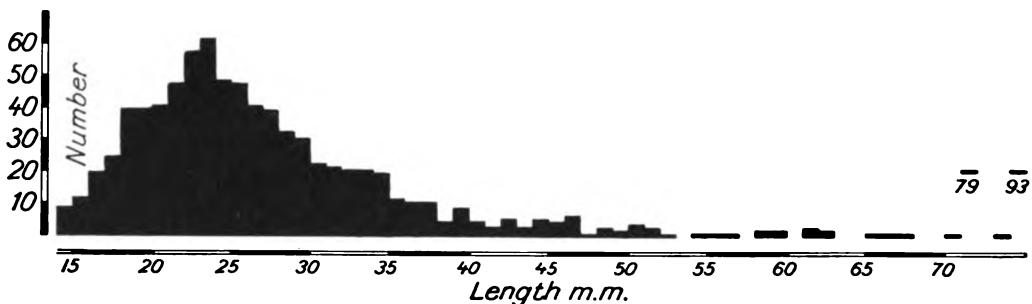


Fig. 13. Diagram showing the length of the arrow- and spear-heads on the Kurile dwelling-sites.

ably, and it is not feasible to divide them into detailed groups as the lines of demarcation between the types are far too variable. Akabori (2) met with the same difficulty in dealing with the arrow-heads found in the Japanese islands, so that he thought it best merely to divide his material up into three main groups: A = stemmed, B = triangular and C = willowleaf-shaped (see Chapter I). On the same principles, 63 % of the Shana arrow-heads belong to type A, 25 % to B and 12 % to C. As to the Rubetsu arrow-heads, the ratios are: A = 37 %, B = 50 % and C = 13 %. The variety of types that are thus incorporated under the different headings will be seen from Plates XII and XIV. It is however not only in form that these arrow-heads vary, but also in size. Many of them are so long that they ought rather to be called spear-heads, but it is not easy to say where the border-line is between arrow-heads and spear-heads. The most important factor in this respect is the weight of the head, but seeing that in most cases this depends on the length, I have made use of the latter factor for obtaining by simple means the classification of these weapons into groups according to size. The result is seen in fig. 13 above, in which all the heads from both Shana and Rubetsu have been grouped together, the difference not only between dwelling-sites but also between types of arrows being small. We find, then, that the most useful length for arrow-heads is apparently about 23 mm., corresponding to a weight of about 0.7 grammes. The minimum length is 14 mm. and the minimum weight about 0.35 gr. One combined group is formed by the heads that are up to 40—50 mm. long, and these might generally be regarded as arrow-heads, while the few longer heads must be regarded as spear-heads. Their weight may be as much as 40 gr. as in the case of the defective specimen in Plate XIII: 7. A further important difference between the shorter and the longer heads is that the latter are generally

of basalt or other more simple species of stone, whereas the former are made of obsidian, chert, etc.

The knives are likewise difficult to divide up into distinct types, as practically every one of the specimens found are of a peculiar type. There are four knives illustrated in Plate XIII, of which No. 3 is merely an unworked piece of basalt notched for binding purposes, 4 a piece of chert, the edges of which have been worked, and Nos. 1 and 2 are of a more carefully fashioned type. Incomparably the finest specimen is from Rubetsu and is illustrated in Plate XIV: 8.

The axes and chisels, on the other hand, possess more clearly defined forms. The most striking type is illustrated in Plates XII: 6, 7 and XIII: 11. It has a quadrilateral section, the greatest breadth being assigned to the edge, and is polished all over. There are 15 specimens of this type from Shana and 1 from Rubetsu. Plate XIII: 10 represents another type, which is almond-shaped, quite unpolished and oblique-edged. One side is generally unworked, and the implements therefore give the impression of being scrapers, though they never have a scraping edge. There are 10 specimens of this type from Shana. Further, there are 2 specimens of the type shown in Plate XIII: 13, a straight-edged axe made by strong blows and with a polished edge. Finally, Plate XIII: 12 illustrates a fourth and somewhat peculiar type of axe, of which there are two specimens, both from Shana. The shape has been obtained by chipping, and the whole of one side is polished. The head, which is round, lies very comfortably in the hand, so that it seems most likely that the axe was never intended to have a helve. The polishing of the one side does not seem to have had any practical significance for the axe, and it may possibly be presumed that the implement was also used as a grind-stone and might thus be regarded as a kind of universal tool.

The scrapers from Shana are of extremely varying types of obsidian, chert, basalt etc. (Plate XII: 1—5). Some of them consist merely of a shiver of stone that has been retouched along the edges, others are retouched all over, sometimes being provided with a notch for binding purposes. Some of these scrapers are remarkably small.

Finally, the objects grouped under the heading of "Various" are: two drills (Plate XIII: 9), two pieces of pumice stone with roughly drilled bi-conical holes, and a carefully finished "sinker" of lava with a bi-conical hole and having a weight of 1.3 kg. (Plate XIII: 14) — all from Shana. From Rubetsu there is a small stone pendant (Plate XIV: 7) and a piece of sandstone containing a drilled, round-bottomed hollow (Plate XIV: 6). The latter object has undoubtedly been used as the upper fulcrum of a rod that has been employed in making fire by drilling. Torii (56) p. 203 states that stones were formerly used for precisely this purpose.

Of all the finds, however, by far the most interesting is the pottery. I believe I have been able to distinguish three separate types of pottery, differing in

quality of ware, ornamentation and form. I propose to call the three types: *A* or smooth pottery, *B* or cord-ornamented, and *C* or textile-ornamented pottery.

*A* is most abundantly represented by entire vessels, the three vessels from Kunashiri being of this type (Plate VI), also five of the vessels from Shana (Plate VII: 1—5) and two from Rubetsu (Plate X: 1, 2), that is to say, ten vessels in all. Besides these, there are 54 fragments from Rubetsu (Plate VIII: 1 and Plate XI: 1—5). The ware of which these vessels consist is mostly black throughout, a few having red or brown flames. It is poorly burnt but extremely dense, and the grains of the tempering material are seldom visible on the surface. The form of the vessels is almost that of the situla, and the ornamentation consists of applied strips of clay (see especially Plate VII: 1 and VIII: 1), and also of incised or stamped lines and dots (Plates VI: 1 and XI: 1). The rim of the vessel's mouth is smooth, with occasionally a few projecting bosses (Plate VII: 3 and Plate VIII: 1). The average thickness of the ware is 7.3 mm. (54 measurements).

Ceramic type *B* is represented by a vessel from Shana and four whole vessels and about 300 fragments from Rubetsu (Plate VII: 6, VIII: 2, IX and X: 3, 4). The ware in these vessels is brown, very infrequently reddish and with black tones. Its surface is rougher than that of *A*. The form of the vessels, which is best illustrated in the two vessels shown in Plate IX, is bell-shaped, with a rim that rises into two or four low lobes. The decorative effect has been obtained by running spatulas over the surface so as to form rings, curves and straight bands separated from the rest of the surface of the vessel by low ridges. Along the bottom of the bands impressions have been made with cords spun over the part, or else coarse brushes, sometimes also with triangular stamped impressions applied in single or double rows (Plate VII: 6 and VIII: 2). The mouths of the vessels are almost without exception decorated with a dentated edge formed out of an applied strip of clay. The only place in which strips of clay are applied is, as here, round the mouth, for those strips that can be seen on the vessels in Plate IX are modelled out of the wall of the vessel and have not been applied separately. I am stressing this point in order to show how far points of contact between the ceramic types *A* and *B* are lacking. The average thickness of the ware is 8.0 mm. (120 measurements).

Finally, type *C* is represented by only 24 fragments from Rubetsu (Plates VIII: 3 and XI: 6, 7) belonging to at least half a dozen vessels, and all of them ornamented with textile impressions on the outside, and one on the inside as well. The ware is brown with black flames, and the tempering sand is slightly visible on the surface. The shape of the vessel cannot be exactly determined, but in some cases it would appear to have had practically vertical sides and a smooth, undecorated mouth, as shown in Plate VIII: 3. Figs. 6 and 7 in Plate XI show however a vessel of a different form, which is of extraordinary interest. Only the bottom and one fragment of the mouth are preserved, but the ware is so characteristic that there can be no doubt whatsoever that the fragments are part of the same vessel. The

bottom differs from the bottoms of the other types of pottery in being concave and ornamented. The vessel expands upwards, and its greatest breadth was probably about half-way up. The mouth however has been only slightly narrower. The rim has been raised to form lobes, though their number cannot now be

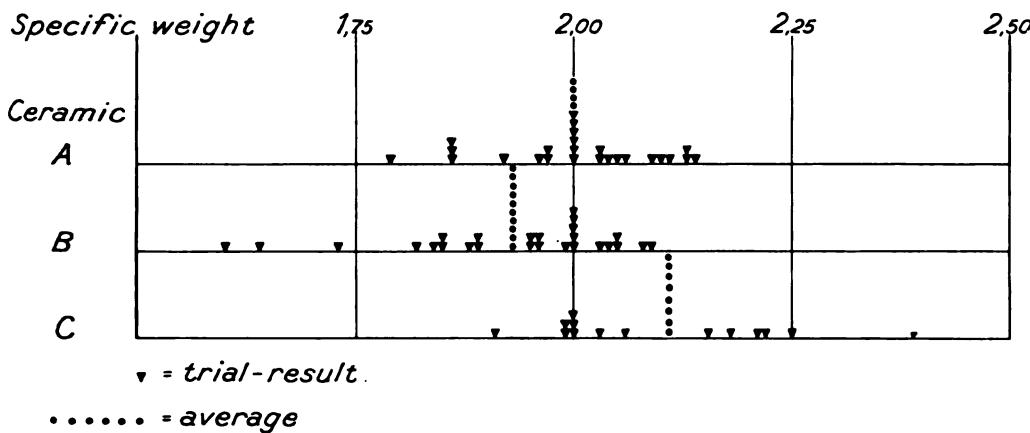


Fig. 14. Diagram showing the specific weight of the ceramics on the site at Rubetsu, Yeterofu, Kurile Islands.

determined, and the lobes themselves ended in bold boss-like swellings. Below the mouth, three rows of string-like ridges have been modelled out of the wall of the vessel. The average thickness of the ware is 9.3 mm. (24 measurements).

Unfortunately type C is too sparsely represented amongst the finds to provide indisputable evidence of its independence of the other two ceramic types. Nevertheless, the consistency of the ware differs entirely from A, while the form and decoration characteristic of the B type of vessel is too stencil-like to permit of the representatives of the textile pottery being compared with them. Besides, it will be seen from fig. 14 above that there is quite a considerable difference between the specific weight of ceramic type C and the specific weights of the other two types.

Though these three types of pottery may thus differ widely in most respects, they nevertheless possess one feature in common, namely, the method of constructing the vessel. Cracks in the ware prove that the vessels are built up of bands of clay, which have been baked together, so that the joints overlap (Plate XI: 4, 5). This method of construction has been described to Torii as follows (56, p. 188) by an Ainu woman living in the island of Shikotan, though originally from the Northern Kuriles:

"Dès l'origine, nous avons toujours fabriqué de la poterie. Depuis trois générations environ nous n'en fabriquons plus, parce que les Yam-gourou (Ainou du

Yézo) nous fournissent largement d'ustensiles en fer japonais, de toutes sortes, et aussi les Russes. Avec les Yam-gourou nous échangeons ces ustensiles, contre

des ailes d'aigles, des peaux des loutres, etc. Pour fabriquer leur poterie, nos ancêtres employaient de la terre glaise qu'ils pétrissaient avec du sable et un hachis très menu d'herbe appelée "nok-kanki", et en faisaient de longs boudins qu'ils enroulaient superposés les uns au dessus des autres, sur un fond plat, également en terre glaise, comme vous voyez dans ce dessin . . . (Ici nos bons vieillards nous ont remis la figure 57 (here fig. 15) ci-contre faite par eux-mêmes). Cela fait, on remplissait le vase d'eau, et on le mettait sur le feu pour le faire sécher. Quand l'eau qu'il contenait était complètement évaporée, il était cuit à point."

One or two details in the production of this pottery are of peculiar interest, and I shall therefore revert to them below. I should however like to point out at once that the statement that the unburnt vessel was filled with water, which was then allowed to boil away, must be due to some mistake on the part either of the Ainu woman or of Torii, for such a procedure would not be technically feasible. We still therefore do not know how the actual firing was done.

One noteworthy technical detail, which occurs in practically every vessel, is holes drilled in pairs on either side of cracks in the clay vessels.

These holes have manifestly been used for fixing in position two parts of a broken vessel by means of string. Cracks and holes could then be stopped up with resin or some such material, though there are now no traces of it left. Repair-holes of this kind are found in 10 % of the *B* potsherds and in 20 % of the *A* pottery. Type *C* has no repair-holes, and I am not aware of any such occurring in the Japanese Ainu pottery.

The most important question in regard to the three ceramic types is their mutual chronological relationship. First of all, it should be observed that they can hardly be contemporary, for in that case they would have influenced one another's shape. In view of the fact that these regions have been so little investigated, and owing to my ignorance of the exact conditions obtaining on the archaeological sites, my chronological estimates are bound to be based more or less on guesswork. The earliest of the three types, then, I consider

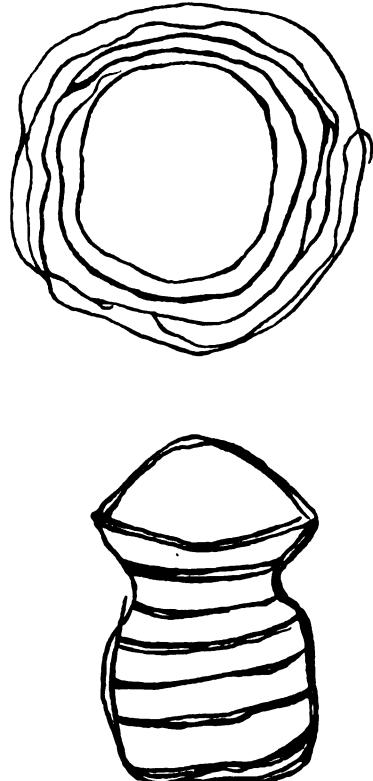


Fig. 15. An Ainu sketch of a clay vessel (after R. Torii).

to be the textile pottery type *C*, my reason being that it is easier to trace its association with the textile pottery of Japan, the *jomonshiki*, than in the case of either of the other two ceramic types; for, in spite of their characteristic conformation, I am aware of nothing that corresponds to them in the Ainu pottery of Hondo,

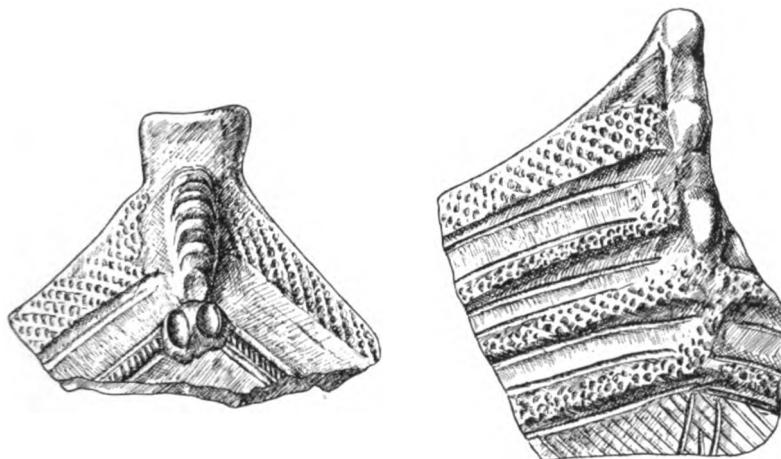


Fig. 16. Two potsherds from the *usudeshiki* site at Kosaku, Shimofusa prov., Hondo. Scale  $1/2$  (4002: 77, 79).

whence we must in all probability assume that the Kuril Ainu's knowledge of the potter's art originally came. The similarity of the *C* type to the *jomon* pottery does not however go beyond the textile impressions. The fragment of a vessel's mouth illustrated in Plate XI: 6 is so strikingly similar in form to some of the potsherds in the Stockholm collection that were found in the Kosaku dwelling-site, Shimofusa prov., near Tokyo (see fig. 16), that one might be tempted to explain the *C*-ware sherd as having been imported from there. It is true that the Kosaku sherds, which are of the *usude* type (see Chapter I), are apparently of a somewhat denser quality, but their colour and specific weight seem to be the same (2.19 and 2.13). One single sherd is of course not sufficient to establish the connection between the *usude* pottery and that of type *C*, but I believe that as a working hypothesis I may refer the emergence of type *C* to the same epoch as that which I assumed above to be the *usude* period, i. e., between the third and the fifth cent. A. D.

The most recent pottery I consider to be type *A*. Its ware differs entirely from all other Ainu pottery, seeing that in most cases it is absolutely jet-black in the fracture. It makes black or brownish-black lines on white paper, and apparently therefore contains a good deal of carbon, a fact that recalls the above-quoted description of the Ainu method of mixing chopped-up herbs with the clay. The nature of the Japanese Ainu ware does not justify the assumption that grass was

an ingredient in the clay-mixture, nor does the nature of either the *B* or the *C* Kuril pottery. It would appear, therefore, that the pottery that was manufactured up to the time when the Japanese export of iron pots and suchlike ousted the Ainu potter's industry was of the same consistency as ceramic type *A*. Further, it should be pointed out that the Ainu drawing published by Torii and reproduced here in fig. 15 shows a vessel of the situla-form that is actually the most common in the *A* pottery. This simple drawing cannot however provide any definite proof, while it should be remembered that the tradition quoted originates in the Northern Kuriles, of whose ceramic conditions we know hardly anything at all (cfr. Chapter III).

As regards the forms characterizing the *A* type of vessel, there is no connection between them and those of *B* and *C*, nor between the *A* forms and the Japanese *jomon* pottery (cfr. however Plate VIII: 3). On the other hand, they have good parallels in the proto-Japanese *yayoi* pottery (see fig. 7 and Plate IV: 4), and one of the vessels found at Shana (Plate VII: 5) is actually made of a ware that closely resembles the Japanese *yayoi* pottery. It seems, therefore, certain, I think, that there is a connection between the *A* type and the *yayoi* pottery, but when this cultural loan took place it is impossible to say.

Finally, the *B* type of pottery I would at a guess place between *C* and *A*. The forms of the vessels give the impression of being a quite weak and degenerate offshoot of the Japanese textile pottery, in which the textile impressions had ceased altogether to be the marks resulting from a technical process of manufacture and had come to be simply a decorative element.

The history of the potter's art in the South Kuriles would then be as follows, if the conclusions I have stated above are correct and if the finds from the Rubetsu dwelling-site more or less fully represent the South Kurile pottery: In the third or fourth century A. D. the South Kuriles became acquainted, probably for the first time, with the potter's art, possibly through the influence of the immigrating Hondo-Ainu, who were compelled by the advance of the proto-Japanese to leave their old dwelling-places, as a result of which not only ware but also decoration and form came to be closely associated with the *jomon* pottery of Hondo. In the course of the succeeding period the pottery of the Kuriles becomes isolated from the Hondo *jomon* pottery and both the form and the ornamentation of the vessels become stereotyped. When eventually reproductions of the proto-Japanese *yayoi* pottery reach the Kuriles, doubtless via Hokkaido<sup>1)</sup>, the old style of pottery must have seen its best days and is incapable of leaving its mark upon the new ceramic elements. Ultimately even these latter had, as I have pointed out above, to make way for the metal ware imported from Japan.

<sup>1)</sup> Munro (36) illustrates in fig. 90 a vessel almost identical with that shown in Plate VI: 1, and states that such vessels are common in Hokkaido.

## III.

## THE PREHISTORIC FINDS REPORTED BY THE SWEDISH EXPEDITION TO KAMTCHATKA 1920-22.

Kamtchatka has been twice visited by scientific expeditions whose programmes included investigations into the Stone Age remains found in the old Kamtchadal pit-dwellings. The first investigation was made by the ethnologist W. Jochelson, of the Russian Kamtchatka Expedition in the year 1910-11 (21, Jochelson), the second by several members of the Swedish Kamtchatka Expedition during the years 1920-22. (3,4 Bergman). Both of them had such extensive programmes that they could not devote much time to archaeological investigations, especially as the frozen soil prevented excavation work on the sites except during a short summer-period (Jochelson, p. 19).

The Russian expedition spent altogether 45 days digging in the sites, the Swedish expedition only about one week. The result of the Russian labours was about 700 artefacts, now in the Central Museum for Ethnography in Moscow (in the museum catalogue the Kamtchatka finds comprise about 1,000 numbers).

The finds from the Swedish expedition are registered in the Historical Museum in Stockholm but are now deposited in The Museum of Far Eastern Antiquities, Stockholm. In the museum catalogue the Kamtchatka finds comprise 279 numbers, 150 of which consist of artefacts.

The Russian investigations were carried out in five districts according to the following table:

No.	Locality	Lat.	Number of			
			investigation days	sites	pits examined	finds
1	Kurile Lake .....	51 $\frac{1}{2}$ °	17	2	1+18	5+340
2	Avatcha Bay and River .....	53°	6	6	6	15
3	Nalacheva Lake and River .....	53 $\frac{1}{2}$ °	11	3	2+4+6	55
4	Kavran River .....	57°	10	1	2	70
5	Kulki River .....	58°	1	1	3	230
Total		—	45	13	42	715

The Neolithic sites examined by the Swedish Expedition:

No.	Locality	Lat.	Number of	
			pits examined	finds
1	Listvenitchnaja Bay .....	52 $\frac{1}{2}$ °	3	12
2	Tarja .....	52 $\frac{1}{2}$ °	?	104
3	Bluff .....	53°	3	13
4	Single finds .....	—	—	5
5	Unknown .....	—	—	13

The investigation in locality No. 1 are described in detail by the investigator, Dr. Sten Bergman, in his work on Kamtchatka (3, pp. 410 et seq., 4, pp. 255 et seq.). Listvenitchnaja Bay lies on the east coast about 200 km. to the north of Cape Lopatka, the southernmost point of Kamtchatka. On the top and the slopes of a hill were found at least 20 pits. Three of them were examined by Dr. Bergman of July 22—23 1922. The pits were round, and in at least one of them the hearth was at one side of the pit. A portion of the pottery, hereinafter called I, was found outside, but all the other finds came from inside the pits. There are no recent habitations in this locality.

Locality No. 2, Tarja, is on the southern beach of Avatcha Bay. Close to the shore there are many pits, and the inhabitants often find antiquities when digging potatoes. Now there are no habitations of any size in this locality. The Swedish collection contains a number of such accidental finds, though also finds from pits examined in 1921 by René Malaise, who took part in the Swedish expedition. The artefacts from Tarja are reproduced by Bergman (3) p. 412 ff.

Locality No. 3, situated on the northern beach of Avatcha Bay, consists of a hill with a large number of pits and some traces of fortifications. According to information received by Bergman in the neighbouring town of Petropavlovsk, 20—25 pits were examined in this place by the Russian Expedition, but Jochelson's book gives no account of this investigation.

Geographically the localities examined by the two expeditions must be divided into three regions:

- I. The neighbourhood of Kurile Lake in the interior of Kamtchatka, 80 km. from its southernmost point (R 1).
- II. The east coast of Kamtchatka from Lat.  $52 \frac{1}{2}^{\circ}$  to  $53 \frac{1}{8}^{\circ}$ , a stretch of coast 100 km. long. (R 2,3 and S 1—3).
- III. The two sites on the Kavran and Kulki Rivers on the west coast, 700 and 800 km. respectively from the southernmost point of the peninsula (R 4,5).

It is possible that there are different periods represented in the collections from each of these three regions, but at present this cannot be proved. When trying therefore to discover regional differences between the artefacts I must assume the material from each one of the regions to be uniform in time. In order to make a comparison between the collections from the three regions, I shall introduce the following symbols to denote the various types of artefacts:

*Of pottery* there are three types: I: coarse, undecorated pots with ears inside. II: also a coarse pottery without ears but with four or five stripes surrounding the rim. III: a finer pottery decorated with dots and lines and occasionally with impressions of baskets or ropes.

*Stone-axes* are found in great numbers, all with square edges and never of flint, obsidian or similar minerals. Jochelson has illustrated a specimen from Kurile Lake (Plate 9: 4) 197 mm. in length, though the usual size is about 120 mm. The

following three types may be distinguished: *A*: Axes made by means of strong blows, leaving on the surfaces coarse scars. The only polished parts are the edges (Plate XVI: 5). *B*: Axes entirely polished and with pointed oval or triangular sections. The axes are made of porphyry or other beautiful minerals by means of strong blows (Plate XVI: 6). *C*: Axes made by means of strong blows. The surface is smoothed by pounding and the edge by polishing (Plate XVI: 4).

*Arrow-heads* are most commonly made of obsidian and are of the following cognate types: *A* lanceolate, *B* lanceolate with square chisel-like base (Plate XVII: 5, 6), *C* lanceolate with rounded base.

The lanceolate arrow-heads in particular are often of such a large size that they ought to be called spear-heads. Jochelson has illustrated a specimen from Kurile Lake (Plate 6: A) 141 mm. in length.

*Knives* are found made of slate and obsidian or similar minerals. The former mineral is only represented by one specimen in the Russian collection from Kavran (Jochelson fig. 38) and one in the Swedish collection from an unknown locality (Plate XVI: 1). The knives of obsidian and similar materials might be divided into three types: *A* knives with one edge (Plate XVI: 2), *B* with two edges and with small shoulders between blade and handle (Plate XVII: 3), *C* with two edges but without shoulders between blade and handle (Plate XVII: 4).

*Scrapers* are found of accidental shapes, but also some that are of a distinct type with flat underside and a semicircular edge (Plate XVI: 3). The largest of the specimens was also found at Kurile Lake (Jochelson Plate 7: 21), having a length of 93 mm.

*Lamps* of sandstone or other soft minerals were found by Jochelson to the number of 36. He divides them into four types: "Circular, elliptical, egglike and sad iron in outline". The three former types can only theoretically be distinguished from one another, and I therefore take only three types into account: *A* with a round, elliptical or oval cavity for oil, *B* with a somewhat triangular cavity, and *C* a special form of *B* with a handle on the smallest side of the lamp.

*Implements of bone* were discovered in great numbers at Kurile Lake, but very few elsewhere, and in the Swedish collection there are only two specimens (Plate XVII: 7), so that there is no occasion to discuss them here.

The artefacts described above are the most important ones, and the following table gives their occurrence in the Swedish Kamtchatkacollection:

No.	Pottery		Stone axes and chisels			Arrow-heads		Knives			Scrapers	Lamps	Bone-implements	Various	Total
	I	II	A	B	C	B	C	A	B	C	A	A	—	—	—
1	3	1	2	—	—	—	—	—	—	—	2	1	—	3	12
2	—	—	24	10	5	22	1	3	1	3	3	1	2	29	104
3	—	—	—	3	—	2	—	—	1	—	—	—	—	7	13
4	—	—	2	1	—	1	—	—	1	—	—	—	—	—	5
5	—	—	1	1	—	1	—	2	1	—	—	—	—	7	13

Under the heading "Various" are enumerated small fragments of implements, sinkers with biconical holes, whetstones, three strange points of sandstone (Plate XVII: 8, 9) and two small objects of obsidian, at least one being of human shape (Plate XVII: 1, 2).

It is impossible to determine the number of implements of each type found by Jochelson, but in his publication he has reproductions enough to show in which of the three regions the types are represented. The following table shows the occurrence of the types in the three regions. In the table the finds by the Swedish Expedition are added to the east region:

No.	Region	Pottery			Stone axes			Arrow-heads			Knives			Scrapers	Lamps		
		I	II	III	A	B	C	A	B	C	A	B	C		A	B	C
I	Kurile Lake .....	?	?		&	&		&	&	&	&	&	&	&	&	&	
II	E. Region .....	&	&	&	&	&	&	&	&	&	&	&	&	&	&	&	
III	W. Region .....			&	&	&		&	&	&	&	&	&		&	&	

Some of the few gaps in the table might certainly have been filled had Jochelson's publication been clear enough to permit us to determine all the finds. The table undoubtedly shows, I think, that the store of implements is the same in the three regions, and the differences are limited to the pottery and the lamps. As far as the lamps are concerned, I think the difference is due to the incompleteness of the material, as the most distinct type C is found in both the northernmost and the southernmost region.

As regards the pottery, Jochelson has distinguished between one northern (III) and one southern (I and II) kind of pottery. The former is found in region III, the latter in region I and II, but he did not know of any connection between them. In the Swedish collection from Listvenitchnaja Bay, however, there is an interesting piece of pottery combining characteristics of the two ceramic types I and II. The find is illustrated in Plate XV: 3.

So far as one can determine, this piece is similar in its decoration to Jochelson's northern pottery, yet it was found on the southernmost site on the east coast only about 200 km. from Cape Lopatka. This fragment was discovered in a pit, outside which there were found several large fragments of pottery of type I (Plate XV: 1, 2). I think therefore that there is no chronological disparity between the different kinds of pottery, and all the circumstances seem to indicate that the artefacts hitherto found belong to the same chronological period. We do not know the length and age of that period, but we have some definite clues to go upon. In the first place we know that, when the Russians arrived in Kamtchatka towards the end of the 17th century, the natives lived in subterranean houses and had a Neolithic civilization. Under the influence of the Russians the Kamtchadals changed their mode of living. They abandoned their underground dwellings, replacing them by block-houses or huts of the Yakut type, and their

store of tools was imported from Russia. We do not know how rapidly this change took place, but it must have taken only a relatively short time seeing that the settlement of the Russians in Kamtchatka was for the purpose of trading for furs by barter, with the result that Russian goods spread rapidly and effectively over the whole of Kamtchatka. An inventory from a Kamtchadal site containing nothing of Russian origin could hardly relate to a more recent period than the middle of the 18th century.

Russian imports were not however the Kamtchadal's first acquaintance with a higher civilization. During the first period of Russian settlement there are said to have been several Japanese ships wrecked on the coasts of Kamtchatka. (Jochelson 21, p. 9). It seems certain that such involuntary visits occurred even much earlier, though we have no evidence to prove it. There may not have been any regular commercial connections established by the Japanese, but according to Torii (56) the Kuril-Ainu, standing in both friendly and hostile connection with the Kamtchadals, introduced Japanese goods to them. The Japanese objects found by Jochelson on Neolithic sites might have been brought to Kamtchatka in one of these ways. These objects are: firstly, the bottom of a Japanese porcelain cup found at Kavran River, and, secondly, three Japanese coins of the eleventh century found at Kurile Lake. There were also found in the same locality one copper and ten iron implements not further described.

The coins from Kurile Lake are of brass and have a hole in the centre. It might be that Kamtchadal women used them as ornaments, but unfortunately Jochelson does not tell us whether they were worn out by long use or not. As all the coins date from the same period, it is probable that they came to Kamtchatka only some few years after they were minted, and considering that the collection was not scattered when it was buried in the earth, the time that elapsed between its being imported and its being deposited in the earth may not have been very long. It is impossible however to determine how long the period was.

Unfortunately it is not possible to take advantage of the fixed point the coins should give us, as Jochelson has not described the relation between the coins and the other finds. However, they most probably belong to the same deposit as the Neolithic finds.

Often the modern habitation has no connection with the Neolithic sites. This might be due, as Bergman (3, p. 414) supposes, to an epidemic in the last years of the eighteenth century having decimated three-quarters of the population. A number of the old Stone Age villages must have been laid waste by this disaster, and from those times the Stone Age in Kamtchatka might be regarded as having closed. As to its beginning, we can only conjecture that it might have occurred earlier than the twelfth century, if, that is to say, the coins from Kurile Lake are able to prove anything.

The answer to the question of the derivation of the Kamtchadal Stone Age culture is equally vague, because the surrounding districts have been so little

investigated. There are however some connections southwards with the northern Kuriles, to judge from the few excavations that have been made on those islands. The most important connection consists of a small find of pottery, an account of which has been published by Torii (56, Plate XXXIII), without however any details as to the place where they were discovered. At least two of the six reported fragments have ears inside and seem to be very similar to the Kamtchadal pottery of type I. Torii derives this pottery from the Ainu pottery of Japan, Saghalin and Hokkaido, where in rare cases pots have been found with ears inside. It is however not very likely that the only detail of this rich pottery which the Ainu in the northern Kuriles were able to imitate was this very exceptional one. Torii (56, p. 195) and Jochelson (21, p. 75) mention iron pots with ears inside manufactured in Japan and distributed in several districts, such as Saghalin, Hokkaido, and certainly also in the Kuriles and Kamtchatka, where they were copied in pottery; it was obviously a very attractive detail to have the ears inside in order to protect the ropes that suspended the pot from being burned. This detail appears to have been adopted in several districts independently of one another, and the sporadic occurrence of that kind of pottery must no doubt be explained in this way. Whether or not it is the same impulse that has produced the pottery with ears inside both in the Kuriles and in Kamtchatka is a question that might be solved when further material is collected from the islands. Jochelson calls attention to the fact that the Kamtchadal pottery is the only type with three ears instead of two or four, but he offers only one piece of evidence to support his theory. It is not clear how many ears there are on the pots illustrated by Torii, and, further, the pieces of pottery found by the Swedish Expedition at Listvenitchnaja Bay are too fragmentary to enable us to determine the number of ears.

I am not aware of any positive analogies to the pottery of type II, but Jochelson has illustrated (20, fig. 165 b) a single Koryak potsherd similar to the II pottery, but as long as there are only two potsherds reported from districts to the north of Kamtchatka it is vain to draw any conclusions.

The thin pottery of type III, often decorated with textile or basket impressions, occurs most abundantly at the Kulki River, a tributary of the Tigil River, the old southern limit of the Koryaks, and there seems therefore to be some connection between the Koryak and the Kamtchadal pottery. Jochelson has published a figure of a broken pot having textile or basket impressions, which he compares with the potsherds from Kulki and Kavran River (20 Jochelson, fig. 165 a). However, there are no analogies to the stamp ornaments of the III pottery in the Koryak pottery, but the number of potsherds described is too small to permit of any conclusions being drawn from them. In this connection I would call attention to pottery decorated with stamps and textile impressions from the southern Kuriles, but these specimens seem to be of quite a different character.

The influences that gave rise to the Stone Age culture of Kamtchatka seem

therefore to have originated partly in the south, partly in the north, while there are at present no sufficient proofs that any influences came from the east, the Aleutian Islands. The pots with ears inside originated in the south, as also the practice of polishing stone axes. The art of polishing axes, as Jochelson mentions (20, p. 610), was unknown to the Koryak.

The human figure of obsidian illustrated in Plate XVII: 1 might have been inspired by the rich figurative art of the Koryak, though it might also have been influenced by the clay idol of the Ainu — if it is necessary to look for any prototypes of this artefact.

The III type of pottery, which is derived from the north, might be a late offshoot of the Siberian textile pottery, but perhaps it is borrowed from the Kuriles via Kamtchatka and afterwards returned to the Kamtchadal. The answer to that problem possibly lies concealed beneath the old Koryak sites.

Thanks to the Swedish and Russian collections, we know the general features of the Neolithic inventory of Kamtchatka. All efforts undertaken with a view to solving the problems of the peninsula must therefore concentrate upon the task of enlarging the body of archaeological material relating to the neighbouring countries. Both in the north and in the south there are virgin areas that are particularly attractive to archaeologists, seeing that it is here that the answer is to be found to the problem of the possible connection between the cultures of Eurasia and America in pre-Columbian times.

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**PLATE I**

## PLATE I: 1.

Clay idol from Hirofune, Mutsu prov., Hondo. Scale  $\frac{1}{1}$  (4006: 36).

The object is a good representative of the clay idols, as they were fashioned during the last of the epochs during which the Ainu pottery in Hondo flourished — the *mutsushiki*. The left arm and the legs are missing, as also the crown-like head-ornament that is characteristic of this type, though there is a mark on the top of the head showing that there has been one. The ornamentation on the body of the figure is typical of the *mutsu* pottery, and can likewise be studied on the vessel shown in fig. 2 in this Plate. The naturalistic details of the figure are confined to the very characteristic goggle-eyes and the nipples on the breast, indicating the female character of the figure.

The ware very closely resembles modern brick, both in colour and character, though it is of greater density.

### *Dimensions:*

Length 90 mm., breadth across breast and arms 80 mm., greatest thickness 28 mm.

## PLATE I: 2.

Clay vessel with spout, from Kamegaoka, Mutsu prov., Hondo. Scale  $\frac{1}{1}$ , (4006: 57).

The vessel very well exemplifies that type of *mutsu* pottery that does not use textile impressions to obtain an ornamental effect. The vessel's shape is quite a common one, and on the strength of that fact it may be assumed that the vessel once had an embossed top something like that shown uppermost in fig. 7.

The construction of the vessel is as follows: the upper and lower portions were made separately and then joined together (an obvious suture on the inside of the vessel shows that the parts were welded together along the equatorial line of the vessel). Finally, the spout was fixed on after the two halves had been joined.

The ware is singularly dense and hard and is painted black or dark-grey. The inside of the pottery is greyish-yellow. The surface appears to have been polished, though it may be that this impression has been obtained by the application of a thinner mixture of clay to form a kind of "slip". This would explain the effect that has been obtained of smoothing out the ornamentation.

### *Dimensions:*

Present height: 70 mm., diam. 120 mm., thickness 4,5 mm.



1



2



**PLATE II**

## PLATE II.

Two clay vessels from the shell-mound at Ubayama, Shimofusa prov., Hondo. Scale  $\frac{1}{4}$  (11286: 3, 2).

The vessels have been reconstructed from sherds found on the occasion of H. R. H. the Crown Prince of Sweden's visit to the dwelling-site. They are particularly characteristic examples of the earliest Ainu pottery, the *atsudeshiki*. The method of manufacture appears to have been thus: their lower part was shaped in a basket or cloth-bag, after which the richly ornamented mouths of the vessels were welded on to the lower portions. This is evidenced by the fact that most of the fragments of the clay vessels found in the Ubayama collection have broken along a very uniform line between the lower body of the vessel and the mouth. Moreover, vessel No. 1 in this Plate shows on its inner side a very clearly defined suture, although none of the cracks have passed across it.

On the lower part of vessel No. 1 there are a number of lines incised with a stick or some such implement about 6 mm. thick. The incision has been made while the clay was still wet, so that the vessel was obviously not burnt while the supporting basket surrounded it. There are no incised lines on the lower section of vessel No. 2. This is possibly due to the fact that this vessel has so heavy a flange round the mouth that the supporting basket proved to be indispensable so long as the vessel was wet, for without it the vessel would have sunk down.

The mouths of the two vessels are probably modelled in one piece with the aid of, among other things, a blunt stick, with which the vertical lines on vessel No. 2, for instance, were made. The  $\sim$ -shaped figures on the same vessel are formed by strips of clay laid on separately.

The ceramic ware is of about the same consistency as modern brick, and moreover, as far as vessel No. 1 is concerned, is of a brick-red colour, here and there passing into black. Vessel No. 2 is grey, though in parts the grey colour passes into black. However, even in the case of this vessel, the interior of the ware is brick-red. The tempering material in the clay is sand, the size of the grains ranging up to 1 mm. The grains of sand have combined with the cracks that have formed round them in the process of burning to make the surface of the vessels quite rough.

### *Dimensions:*

No. 1: Height 345 mm., diam. 320 mm., thickness of the ware 10 mm.

No. 2: Height 460 mm., diam. 300 mm., thickness of the ware 10 mm.





**PLATE III**

### PLATE III: 1—3.

Three vessels from the shell-mound at Ubayama, Shimofusa prov., Hondo. Scale  $\frac{1}{4}$  (11286: 1, 4, 5).

The vessels have been reconstructed out of sherds found on the occasion of H. R. H. the Crown Prince's visit to the site. Of No. 1 only the mouth was found; it was discovered in a standing position as an inclosing border round a hearth. It is now impossible to guess at the original appearance of the vessel. The ornamentation consists of two elements: basket or textile impressions, and attached strips of clay, applied in the  $\sim$ -shapes that are typical of the Ubayama ceramic finds. These figures were applied while the vessel was still wet. The consistency of the ware is about the same as that of modern brick, but the colour is more yellowish. For further details regarding this and the next two vessels see the description of the pottery in Plate II.

#### *The dimensions of the vessel's mouth:*

Diam. 480 mm., height 190 mm., thickness of the ware 14 mm.

The rim of vessel No. 2 is raised to form three lobes — a very common phenomenon in Ainu pottery. The only other decoration is impressions of textiles, which were in all probability applied as a technical means, as described in connection with Plate II. The same may be said of vessel No. 3. The colour of these two latter vessels is: lower part brick-red, upper part almost black.

#### *Dimensions:*

No. 2. Height 345 mm., diam. 240 mm., thickness of ware 9 mm.

No. 3. Height 245 mm., diam. 195 mm., thickness of ware 10 mm.

### PLATE III: 4.

Clay vessels from Kami Nojirimura, Iwashiro prov., Hondo. Scale  $\frac{1}{4}$  (4009: 3).

This vessel has a typical *mutsushiki* ornamentation, i. e., an irregular network of loops incised in a surface that is generally decorated with textile impressions, as is the case with the vessel in question. Further, a number of small indents encircle the vessel just below the rim. The rim itself is worn and a few small pieces are missing. It is therefore not apparent from the fig. that the edge was decorated with small bosses — this being very characteristic of the *mutsu* pottery (see fig. 7). The vessel is made of yellowish-red ware with black flames. The ware resembles in character a soft, fine-grained sandstone, and it crumbles very easily.

#### *Dimensions:*

Height 80 mm., diam. 145 mm., thickness of ware 10 mm.

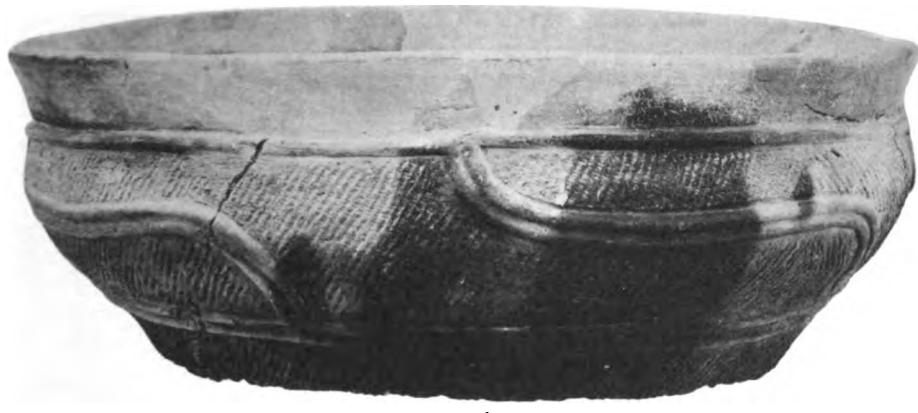
### PLATE III: 5.

A clay vessel from Tokoshinai, Mutsu prov., Hondo. Scale  $\frac{1}{4}$  (4006: 59).

This vessel is likewise typical of *mutsu* pottery, as described above. The incised coils are limited to the upper part of the vessel, but the whole of the lower part has textile impressions. The body of the vessel was apparently made in one piece, the neck being added afterwards. The ware is very dense and hard, the tempering sand being composed of grains some of which are as much as 2 mm. in diameter. Nevertheless, the surface feels quite smooth. The colour is grey, toning into black and faint reddish-yellow.

#### *Dimensions:*

Height 145 mm., diam. 145 mm., thickness of the ware 5 mm.



1



2



3



4



5



**PLATE IV**

#### PLATE IV: 1.

Clay vessel from Sinano prov. (?), Hondo. Scale  $1/8$  (4063).

This vessel is of *yayoi* ware. It shows slight traces of a primitive turning process, but the surface was afterwards made smooth. Round the upper part of the body of the vessel and just below the rim there are some very shallowly incised, encircling lines. In most cases the ornamentation on the *yayoi* pottery is confined to these two places, as is also the case with the vessel reproduced in fig. 2. The ware is of a dense and firm quality, and although the tempering sand is visible on the surface, the latter feels quite smooth. The colour is yellowish-brown with black flames.

##### *Dimensions:*

Height 185 mm., diam. 154 mm., thickness of the ware in the neck of the vessel 6 mm.

#### PLATE IV: 2.

Clay vessel from Angyo, Shinano prov. (?), Hondo. Scale  $1/8$  (4012: 1).

The vessel is of *yayoi* ware. In section it seems to be completely circular, but there are no traces of turning. On the other hand, vertical traces of a modellingstick or suchlike implement are visible. On the edge of the neck of the vessel and on the uppermost part of the body there is an ornamental band consisting of scored lines, about  $1/8$  mm. broad, forming a fine network with rhombic meshes. Just at the narrowest part between body and neck there have been 23 small rivet-head-shaped clay bosses attached, though two of them have disappeared. The ware is dense, but not particularly hard. The apparently quite rough tempering material causes innumerable small ridges on the surface of the vessel, which nevertheless feels quite smooth. The colour of the ware is yellow, but a thin coat of yellowish-red colour has been laid on the unornamented parts.

##### *Dimensions:*

Height 245 mm., diam. 200 mm., thickness of the ware 6 mm.

#### PLATE IV: 3, 4.

Two clay vessels from a "rock-cut tomb at Yavato, near Kyoto", Hondo. Scale  $1/8$  (4000: 28, 10).

These vessels are typical examples of the sepulchral pottery, *iwaibeshiki*, which is a uniform grey, very hard and rough owing to the different sizes of grain in the tempering-sand. The surface of the vessels shows very clearly the marks of the turning process.

The vessel depicted in fig. 3 is ornamented with three circumambient bands of vertical lines, one round the body of the vessel, one round the neck and one round the mouth. In the middle of the first band there is a hole made prior to the vessel's being burned, 14 mm. in diam., (not visible in fig. 3). In many vessels of this kind there is a similar hole in the same place.

The vessel shown in fig. 4 has as its sole decoration a few circumambient lines, and round the equatorial line of the body a band of oblique comb-marks. The characteristic notches in the foot of the vessel were cut while the clay was still wet. The vessel is not quite upright; this was probably not deliberately done on the part of the potter, but is due to the fact that the clay was not sufficiently hard to be able to retain its shape during the drying process. The grains of the tempering-sand on the surface of the vessel have been embossed through weathering. Except in a few places the vessel has become discoloured by the application of a secondary layer of clay.

##### *Dimensions:*

No. 3. Height 175 mm., diam. of the mouth 150 mm., thickness of the ware at the neck 5 mm.

No. 4. Height 295 mm., diam. 150 mm., thickness of the ware at the neck 6 mm., at the foot 9 mm.





**PLATE V**

## PLATE V: 1.

Stone club (*raiko*) found at Kami Nojirimura, Iwashiro prov., Hondo. Scale  $1/2$  (4009: 10). The club is of basalt, somewhat weathered on the surface. The implement has been more carefully shaped than appear generally to be the case with antiquities of this kind. Its ends are not sharp-edged but blunt. There are practically no data in European literature regarding the places where similar objects have been found, but they may be said with a high degree of probability to be traceable to the Ainu culture.

*Dimensions:*

Length 168 mm., thickness 35 mm.

## PLATE V: 2.

Chisel from the district of Kumamoto, Higo prov., Kyushu. Scale  $1/2$  (4005: 4). This chisel is two-edged, the edges being pitched at very obtuse angles. The material is dark-green porphyry, which has been carefully polished. Chisels of this type are absolutely foreign to the Neolithic world of form in Japan, though they are very numerously represented in Formosa. Munro (36) illustrates in fig. 18: 14 an almost identical chisel and states that it was found in Formosa. He makes no mention of any analogous finds in Japan, nor have I seen any statement on the subject elsewhere. The province of Higo lies in South Kyushu, the district in which there is most reason to expect Formosan influence. The chisel in question would appear however to be simply an exception to a rule according to which Japan's and Formosa's Stone Ages have very little in common.

*Dimensions:*

Length 72 mm., breadth 20 mm., thickness 13 mm.

## PLATE V: 3.

Stone sword (*sekibo*) found at Kami Nojirimura, Iwashiro prov., Hondo. Scale  $1/2$  (4009: 5). This object is of slate, half grey and half black. Both the shaping and the polishing have been very carefully done, but cracks in the slate have now damaged the hilt and the black point. The stone sword would seem to belong to the Ainu culture.

*Dimensions:*

Length 363 mm., breadth 40 mm., thickness 13 mm.

## PLATE V: 4.

Comma-shaped bead (*magatama*) found in Yamato prov., Hondo. Scale  $1/2$  (4007: 98). This bead is of green jasper, singularly well shaped and polished. The hole has been drilled from one side only and is therefore conical in shape. Its diameter is 4 mm. on one side and 2 mm. on the other.

*Dimensions:*

Length 41 mm., thickness 13 mm.

## PLATE V: 5.

"Stone hat" from Muroran, Iburi prov., Hokkaido. Scale  $1/2$  (4002: 48). This object is probably made of liparite; the surface is much weathered. Sherds had already been struck off one side of it in ancient times. The shaping has been done with comparative care, but in view of the weathering it is impossible to judge how the surface has been treated. Like the objects reproduced in figs. 1 and 3 in this same Plate, this object is traceable to the Ainu culture.

*Dimensions:*

Height 115 mm., length 132 mm., breadth 65 mm.





**PLATE VI**

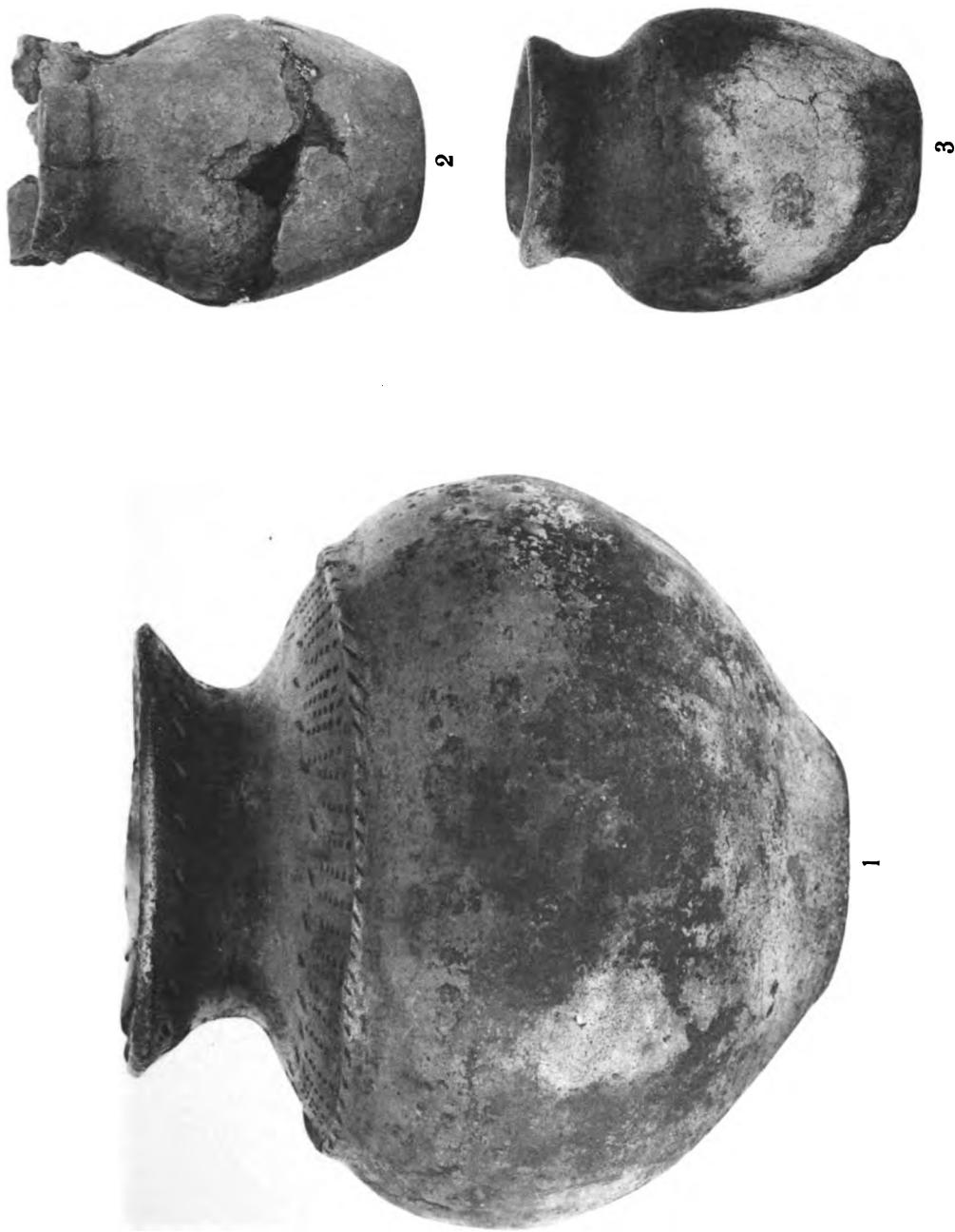
## PLATE VI.

Three clay vessels from Kunashiri, Kurile Isls. Scale  $\frac{1}{2}$  (11272: 1—3).

These vessels belong to pottery type *A*. The two smaller ones have the situla-form that is characteristic of the *A* pottery and are undecorated. The larger vessel, on the other hand, is ornamented with markings made with a six-toothed comb and with small lancet-shaped indentations beneath the mouth as well as in conjunction with the comb-markings. Round the vessel there runs, modelled out of its wall, a ridge marked with transverse lines, which give the ridge a cord-like appearance. The vessel is remarkably well shaped. All these three vessels are black with brownish spots.

### *Dimensions:*

	No.	1	2	3	
Height .....		205	110	110	mm.
Diameter .....		205	85	90	„
Thickness of the ware .....		4	6	7	„





**PLATE VII**

## PLATE VII.

Six clay vessels from Shana, Yeterofu, Kurile Isls. Scale  $\frac{1}{2}$  (11271: 1—6.)

Vessels 1—5 represent pottery of type A. No. 1 has the situla-like form, with a decoration of applied strips of clay. About 20 mm. below the mouth are two repair-holes at two diametrically opposed points, drilled at a distance of 30 mm. from one another, and between each pair of holes there is an old crack. The vessel is grey with black flames.

No. 2 has a situla-like form, is greyish-brown in colour and is undecorated.

No. 3, the rim of which has three ornamental knobs, is in shape somewhat reminiscent of such vessels as are illustrated in Plate IX, i. e. of the B type of pottery. The black ware is however typical of the A type. It may be that this small vessel indicates the existence of some relation between A and B.

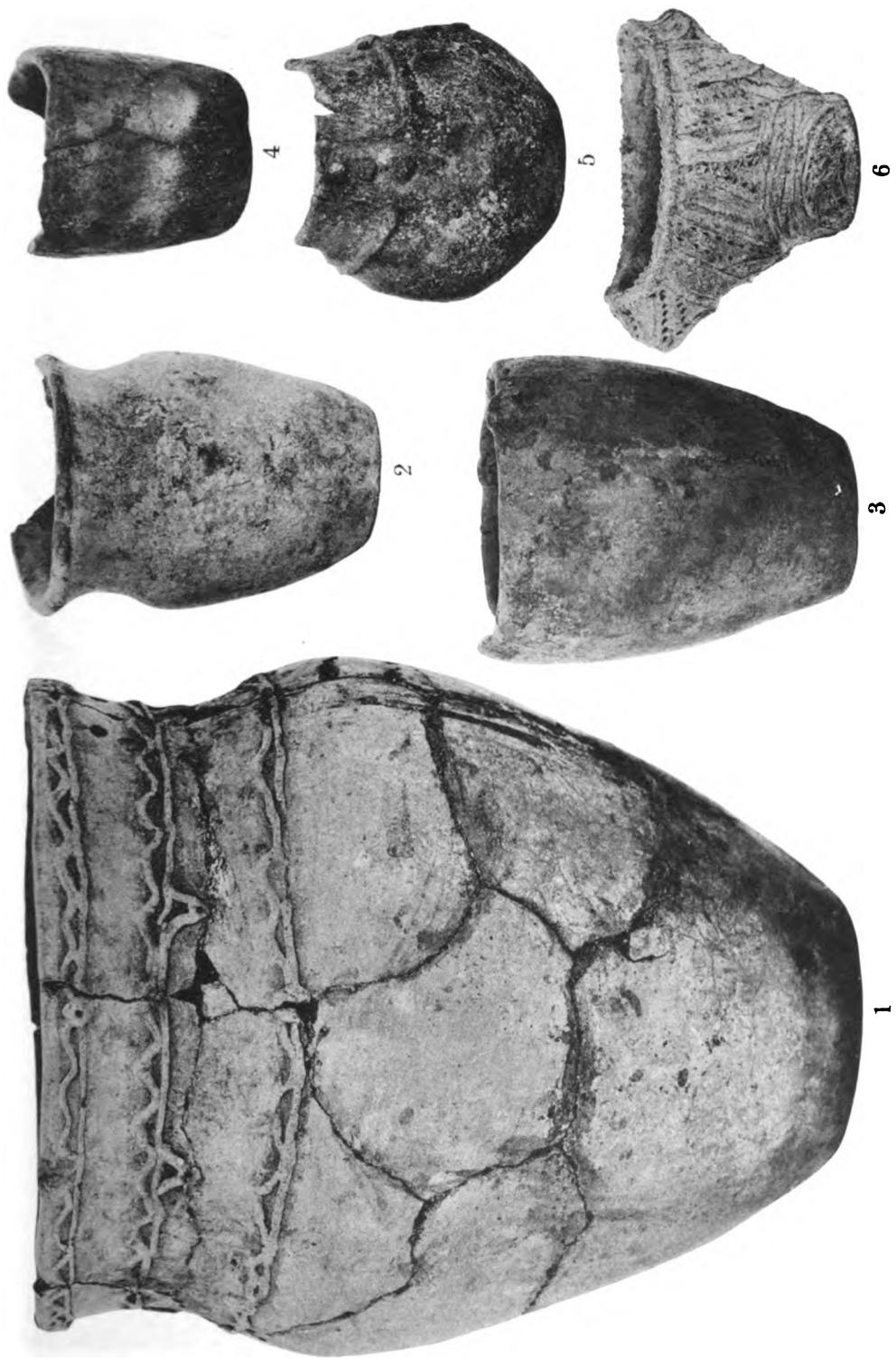
No. 4 is a cup of simple shape made of dark-brown ware without any ornamentation.

No. 5 is a clay vessel of unusually hard ware, reminiscent of the Japanese *yayoi* pottery. The colour is black with reddish-brown shadings. The ornamentation consists of imposed strips of clay and clay bosses.

No. 6 is a clay vessel of the B type of pottery. The ware is reddish yellow, the ornamentation consisting partly of cord impressions and partly of small triangular indentations. The projection just below the mouth on the right of the illustration is a handle, while that on the left is a spout. No spout of a similar kind has been found amongst the sherds collected at Rubetsu. Compare however Plate X: 3. Moreover, the handles in the form of bosses are rare in the material found at Rubetsu; in fact, they have been found only on one fragment and a reconstructed vessel of type B (Plate X: 4). Cf. also Plate XI.

### Dimensions:

	No.	1	2	3	4	5	6	
Height .....		260	105	115	65	85	75	mm.
Diameter .....		215	80	95	65	85	—	„
Thickness of the ware .....		10	6	6	6	4	4	„





**PLATE VIII**

## PLATE VIII.

Three fragments of vessels from Rubetsu, Yeterofu, Kurile Isls. Scale  $\frac{1}{8}$ , (11270).

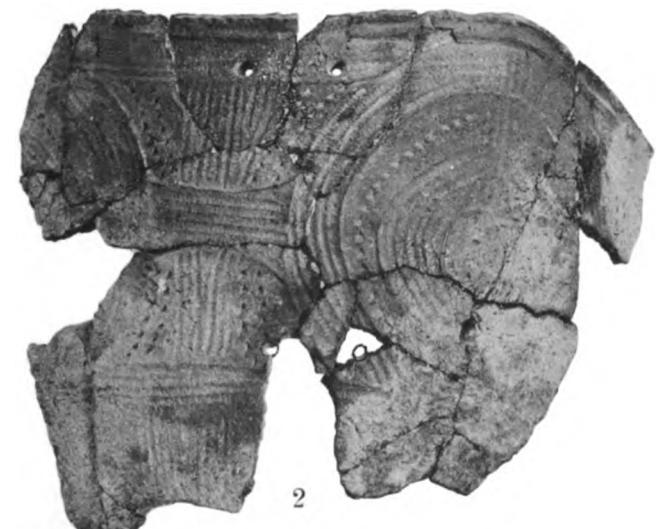
No. 1: Fragments of the *A* type of pottery. The vessel was clearly of the situla form, the diameter of the mouth being about 250 mm. The colour is black with red flames. On the rim is a small triangular boss, and further down on the wall of the vessel there are two solid triangular bosses adjacent to one another. These bosses cannot have had any practical purpose. The ornamentation consists of applied strips of clay, pressed into the wall of the vessel at regular intervals. Two repair holes can be seen at either end of the fragment. The thickness of the ware is 10 mm.

No. 2: Fragments of the *B* type of pottery. The vessel must have been about 250 mm. in diameter. Its mouth is shaped into four low lobes. The rim of the vessel is ornamented with a separately applied band of clay on which regular impressions have been made, thus forming an indentation. The surface of the vessel has been worn by sand, so that the tempering-sand grains are clearly visible. The vessel is of a brownish-grey colour. The decoration — circular patterns — is by far the most common in pottery of this type. There are two pairs of repair-holes, the one above the other, in the centre of the fragment. The thickness of the ware is 7 mm.

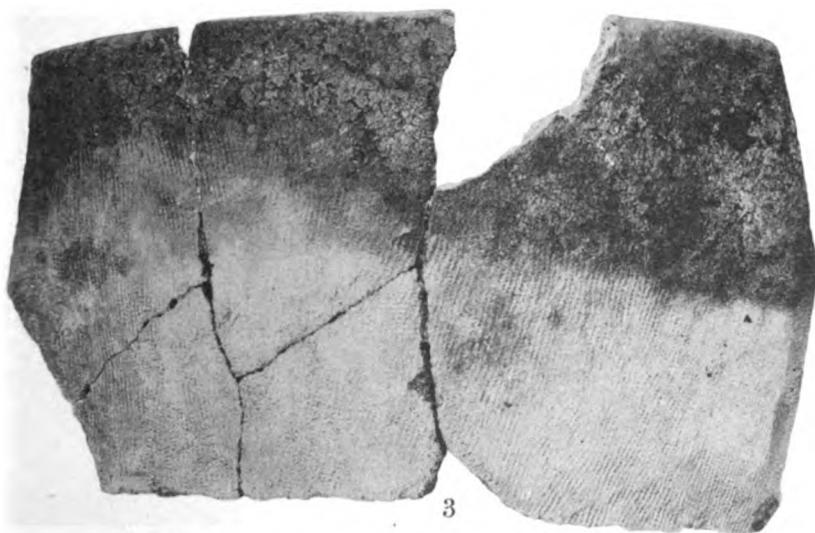
No. 3: Fragments of the *C* type of pottery. The vessel was 450 mm. in diameter and is the largest of the vessels in the Kurile collection. The sole ornamentation consists of close vertical cord impressions together forming a kind of mat-work of the type, for instance, illustrated by Torii (56) in fig. 51. The colour of the vessel is reddish-brown. The ware is 13 mm. thick.



1



2



3



**PLATE IX**

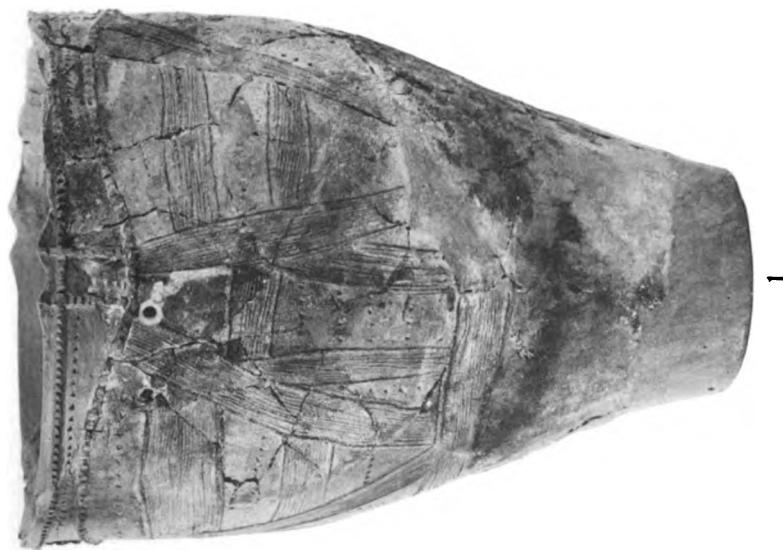
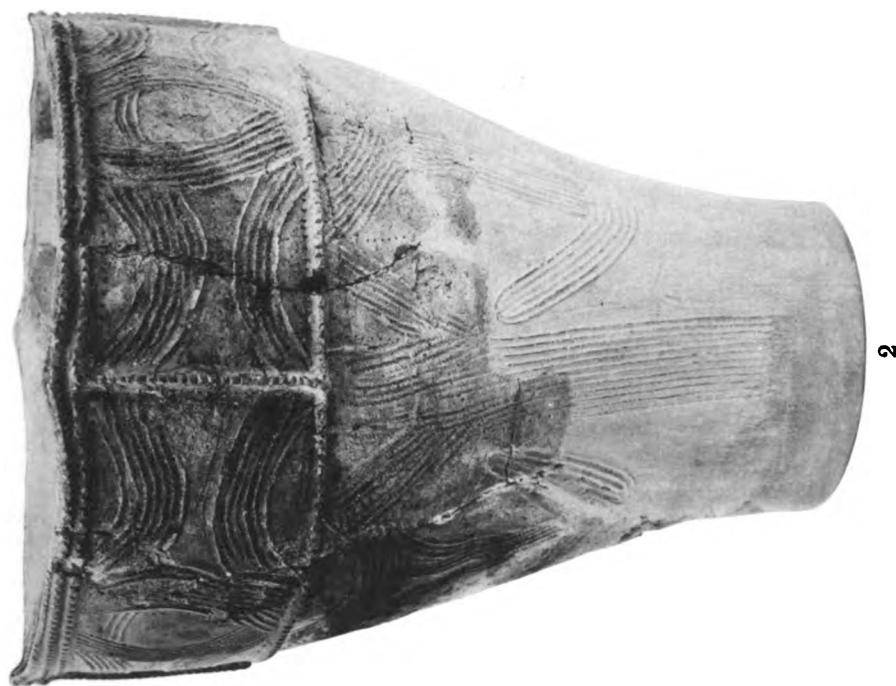
## PLATE IX.

Two clay vessels reconstructed from fragments found at Rubetsu, Yeterofu, Kurile Isls. Scale  $\frac{1}{8}$  (11270).

These vessels are typical examples of ceramic type *B*. On No. 2 the decoration consists of cord impressions, while some kind of rough brush has been used for ornamenting No. 1. The strips of clay on the upper portions of the vessel have not been applied but have been shaped out of the actual wall of the vessel. Both are of a black and brown colour. There are a couple of repair-holes in No. 1.

*Dimensions:*

	No.	1	2	
Height .....		415	460	mm.
Diameter .....		300	375	"
Thickness of the ware .....		10	11	"





**PLATE X**

## PLATE X.

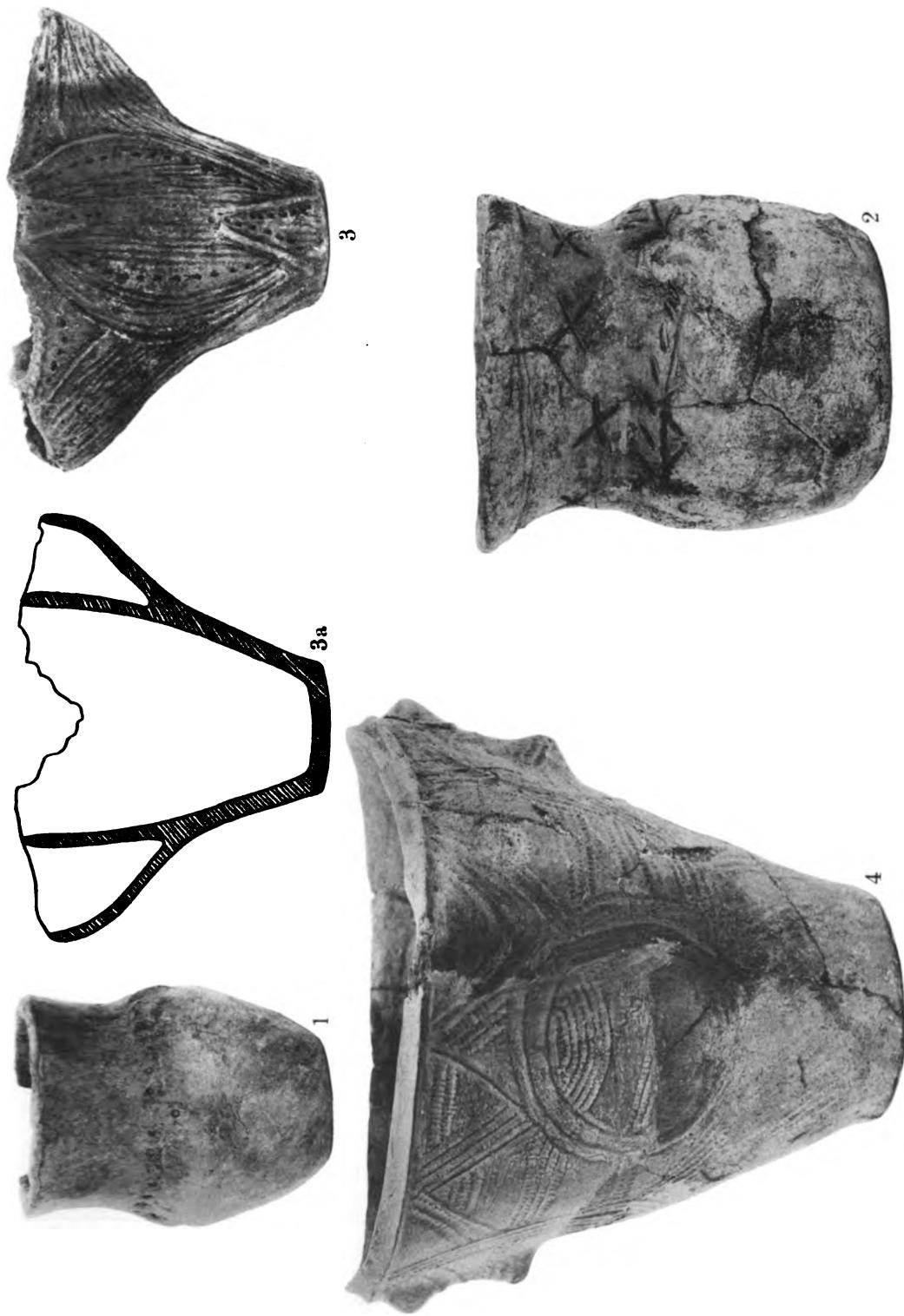
Four clay vessels found at Rubetsu, Yeterofu, Kurile Isls. Scale  $\frac{1}{2}$  (11270).

Nos. 1 and 2, of ceramic type A, are situla-like in form. No. 2 is brown and black and is ornamented with a row of stamped indentations and four small applied bosses. No. 1 is greyish-brown and of very poor quality ware, the surface of which has rubbed off. The decoration consists of a few carelessly incised lines and four round bosses, which have now for the most part disappeared.

Nos. 3 and 4 are of ceramic type B, the colour brown and black. The decoration is of a type that is common in this pottery, but No. 4 is provided with a couple of handles in the form of bosses. No. 3 is a very curious and, unfortunately, a somewhat defective vessel. It seems however to have had a spout on the damaged side. Moreover, on two opposite sides there is a pocket, which apparently has not served any practical purpose.

### *Dimensions:*

	No.	1	2	3	4	
Height .....		125	85	100	170	mm.
Greatest width .....		110	70	145	190	„
Thickness of the ware .....		8	10	7	6	„





**PLATE XI**

## PLATE XI.

Seven fragments of clay vessels from Rubetsu, Yeterofu, Kurile Isls. Scale  $\frac{1}{2}$  (11270).

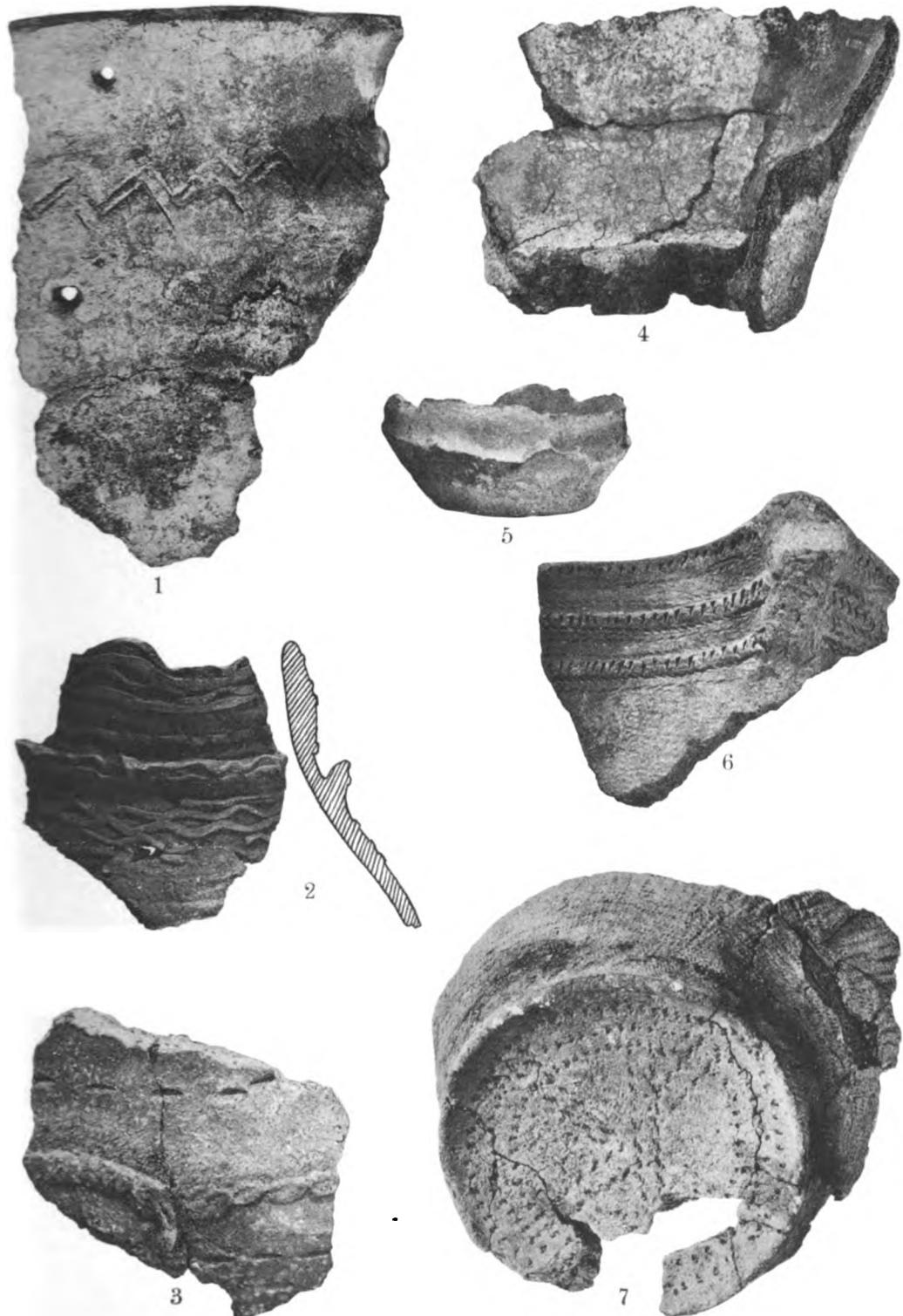
No. 1: Fragment of type A pottery, with two repair-holes and a roughly incised ornamentation. The vessel was of the situla form and was about 170 mm. in diameter. Thickness of the ware 10 mm.

No. 2: Fragment of a vessel of type A pottery. The sherd gives evidence of a rich ornamentation with strips of clay and shows an unusually varied profile. The form of the vessel was probably that of a situla, although the mouth must have been more than usually compressed. The rim is moulded into small lobes. The colour is black. Thickness of the ware 6 mm.

No. 3: Fragment of a type A clay vessel, the decoration consisting partly of elliptical indentations and partly of a strip of clay, apparently intended to imitate a string, the single end of which hangs loose. The fragment has been worn by sand, and that process has destroyed the sharpness of some of the detail. Thickness of the ware 9 mm.

Nos. 4 and 5: Fragments of the bases of two type A clay vessels, showing the method of procedure employed in their construction (see Chapter II). No. 4 shows a crack between the base and the first strip of clay, also a relatively uniform horizontal cracked surface between the first and the second strips. It is seen from the right-hand edge of the figure how the strips of clay overlap one another. No. 5 shows how the base of a vessel has broken away from the old sherd between this and the first strip of clay.

Nos. 6 and 7: Fragments of type C pottery. They are in all probability part of the same vessel. The exterior is ornamented with textile impressions, while with the aid of short cord impressions the concave base of the vessel has been decorated with three concentric circles and 6 pairs of radial spokes. The fragment of the mouth of the vessel has a large boss on it, towards which the rim is elevated. Three rows of indentations run parallel to the rim, the two lower rows running along raised bands. The colour of the fragments is black and reddish-brown. The thickness of the ware is 10 mm.





**PLATE XII**

## PLATE XII.

Stone objects found at Shana, Yeterofu, Kurile Isls. Scale  $1/1$  (11271).

Nos. 1—5: Scrapers of various types.

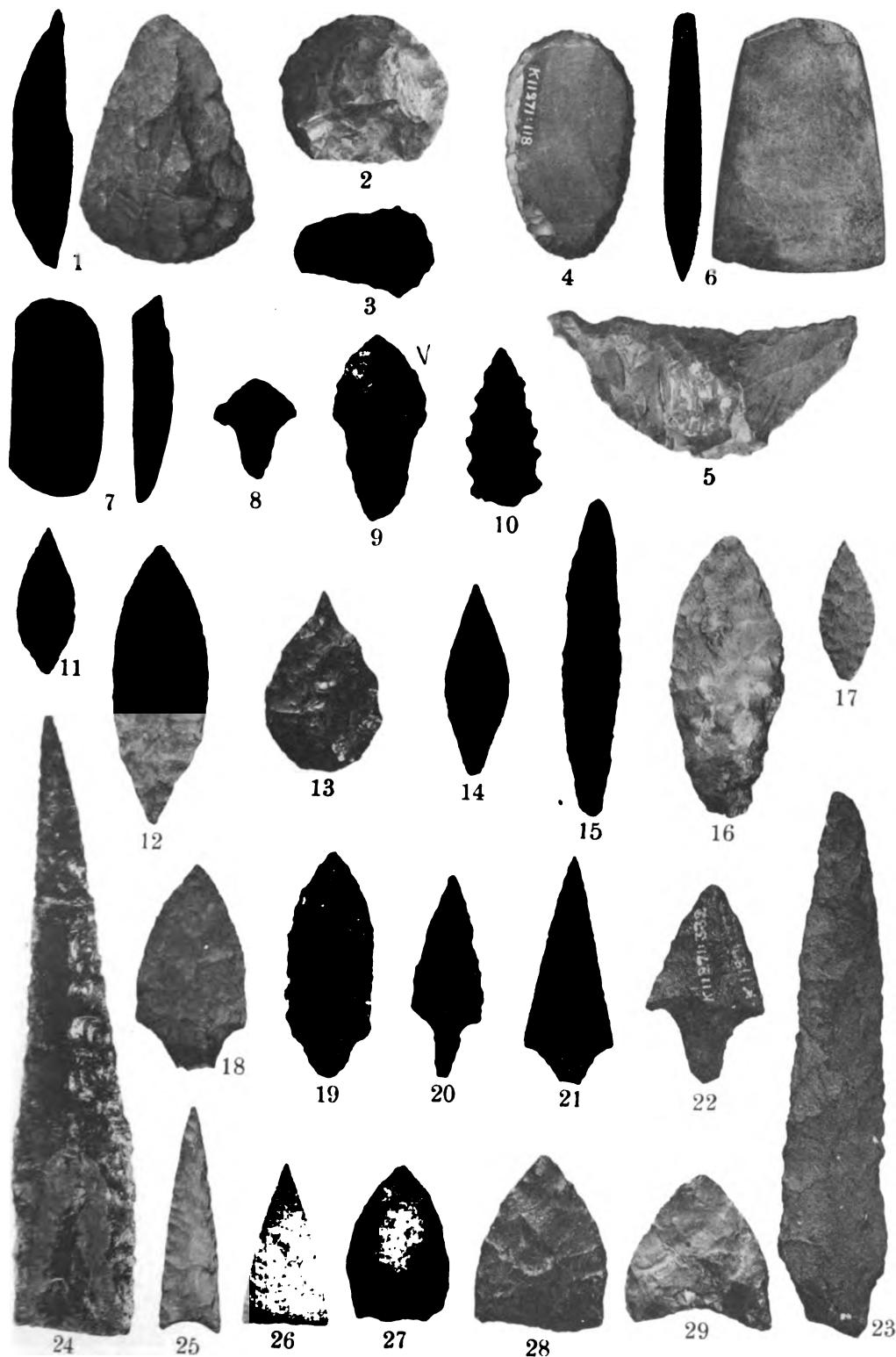
„ 6—7: Chisels.

„ 8—10: Arrow-heads of somewhat unusual types; 8 and 9 with an unusually strong tang, 10 being the only arrow-head in the collections that is serrated.

Nos. 11—17: Arrow-heads, type C (willow-leaf-shaped).

„ 18—23: „ „ „ A (stemmed).

„ 24—29: „ „ „ B (triangular).





**PLATE XIII**

PLATE XIII.

Stone objects found at Shana, Yeterofu, Kurile Isls. Scale  $\frac{1}{2}$  (11271).

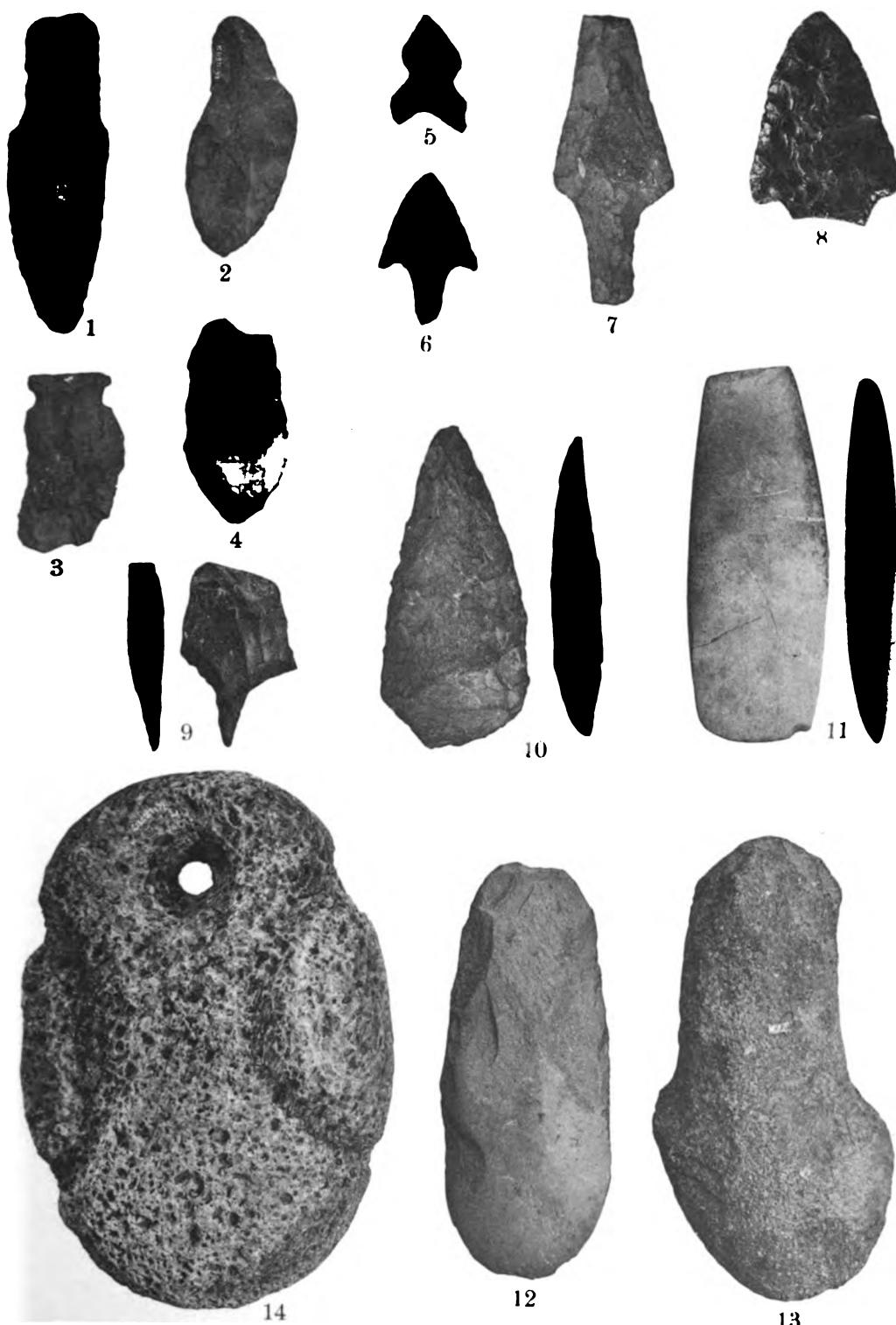
Nos. 1—4: Knives of various types.

„ 5—8: Spear-heads of various types.

No. 9: Drill.

Nos. 10—13: Axes.

No. 14: Sinker made of lava.





**PLATE XIV**

#### PLATE XIV.

Stone objects found at Rubetsu, Yeterofu, Kurile Isls. Scale  $\frac{1}{1}$  (11270).

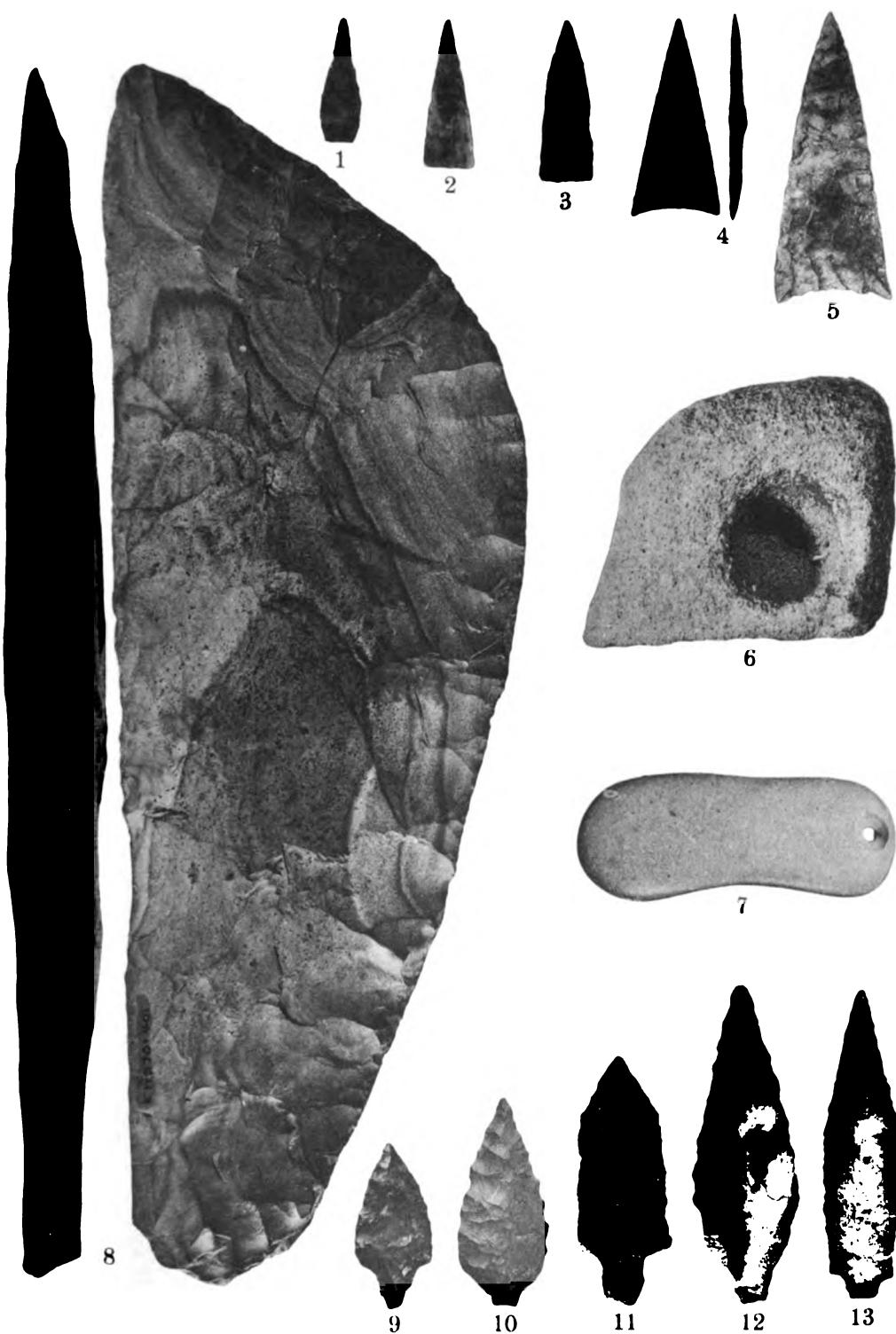
Nos. 1—5: Arrow-heads of type B (triangular).

No. 6: Stone with a depression, probably used when making fire by drilling.

„ 7: Ornamental pendant.

„ 8: Knife made of chert.

Nos. 9—13: Arrow-heads of type A (stemmed).





**PLATE XV**

## PLATE XV.

Fragments of clay vessels from Listvenitchnaja Bay, Kamtchatka. Scale  $\frac{1}{2}$ , (4035).

Nos. 1 and 2 are of type I with ears on the inside. No. 1 is reconstructed, but the fragments are not sufficiently large to enable us to determine the number of ears. The distance between the two preserved ears can however be stated with certainty to have been close on one-quarter of the entire circumference of the vessel. Both in ware and form the vessel is of the simplest kind. The ware, which is black above and brown below, scales off very easily. The tempering material is coarse sand, which gives the vessel a very rough surface. The vessel has been irregularly round in shape, the width being between 300 and 350 mm. The vessel to which the fragments in fig. 2 belong was of about the same width. Above each ear the rim of the vessel is raised to form a small lobe. The thickness of the ware is about 10 mm. These fragments were found outside one of the dwelling-pits investigated by Bergman.

No. 3: Fragment of a vessel of type III. A decoration consisting of impressed holes runs round the rim, which rises in the left-hand corner of the figure to form a lobe similar to those seen in figs. 1 and 2, but now largely broken off. It is just possible that remains of an ear are traceable on the inside of the vessel just below this lobe, so that it is only the simple decoration that distinguishes this vessel from Nos. 1 and 2. The colour is: black outside, brown inside. The ware is 8 mm. thick. The fragment was found by Bergman in one of the dwelling-pits he investigated.



1



1a



2



3

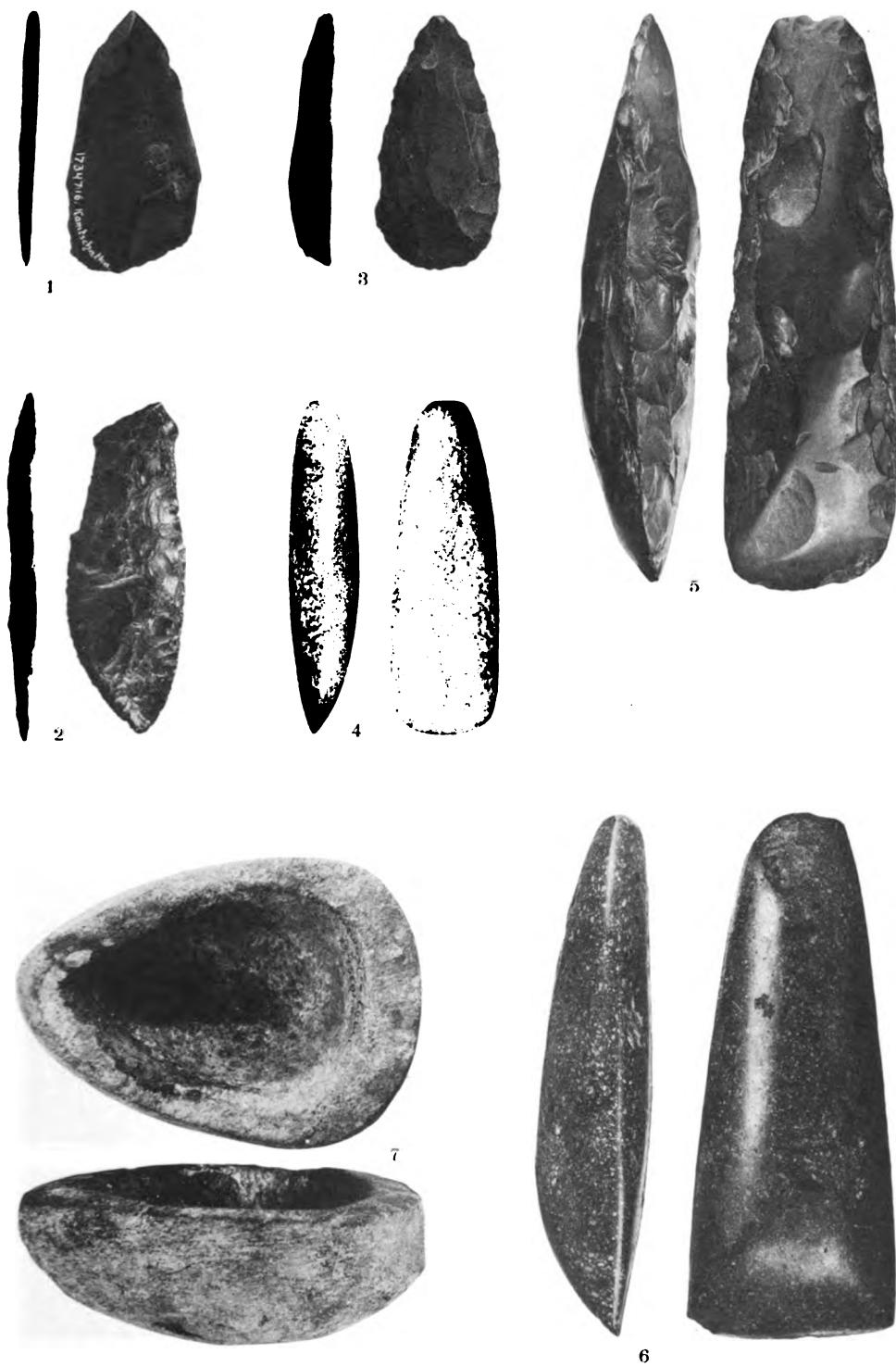


**PLATE XVI**

PLATE XVI.

Stone objects from Kamtchatka. Scale  $\frac{1}{2}$  (4035, 4036).

No. 1: Knife made of slate (place where it was found unknown).  
" 2: Knife made of obsidian from Savoiko (type A).  
" 3: Scraper from Tarja.  
Nos. 4—6: Axes from Tarja (types C, A and B).  
No. 7: Lamp from Tarja (type A).





**PLATE XVII**

## PLATE XVII.

Stone and bone objects from Kamtchatka. Scale  $1/1$  (4035).

Nos. 1—2: Obsidian sculptures, No. 1 from Tarja, No. 2 from Bluff.

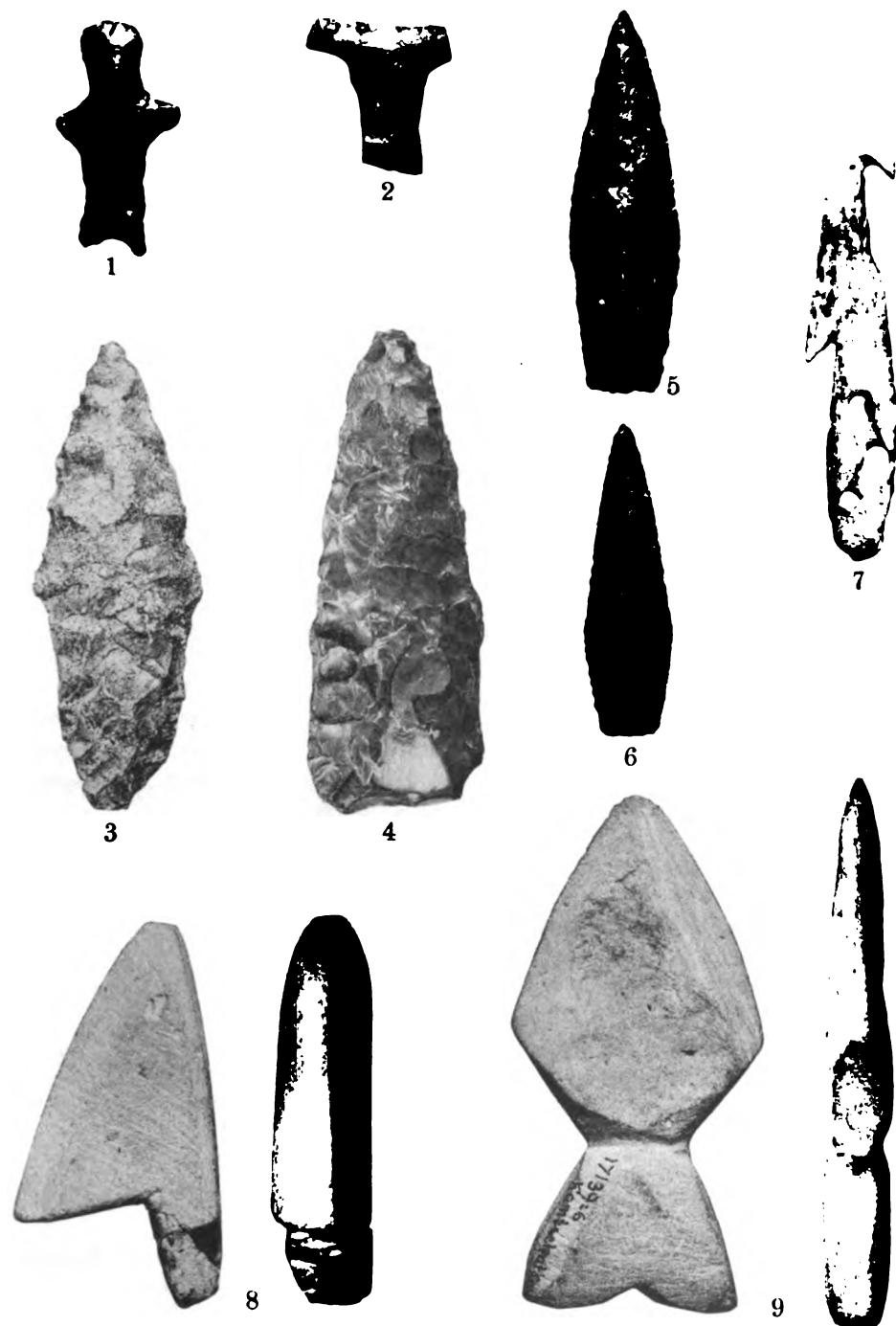
No. 3: Knife, probably from the environs of Petropavlovsk (type B).

„ 4: Knife from Tarja (type C).

Nos. 5—6: Arrow-heads from Tarja (type B).

No. 7: Harpoon-head made of bone, from Tarja.

Nos. 8—9: Objects made of sandstone, from Tarja.





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# NOTES SUR QUELQUES OBJETS NÉOLITHIQUES TROUVÉS À FORMOSE

PAR

*MARGIT BYLIN*

Leurs Altesses Royales le Prince Héritier et la Princesse Héritière de Suède ont bien voulu offrir au Musée des Antiquités d'Extrême-Orient, et à titre de don, trois collections d'antiquités provenant de Formose. L'une d'elles fait partie d'une grande collection donnée en 1926 à Leurs Altesses Royales par le Prince Hikoichi Motoyama. Les deux autres collections Leur ont également été remises en 1926, au cours d'un voyage en Extrême-Orient, par le Docteur Atsushi Miyahara, médecin japonais. Tous les objets qui en font partie ont été découverts et exhumés par M. Miyahara.

La collection du Prince Motoyama a été réunie à Taihoku, mais la provenance exacte des objets est inconnue. Elle ne compte d'ailleurs que cinq pièces, toutes en roches diverses: 3 haches et 2 ciseaux. Une des haches est de dimensions remarquables (longueur 70,4 centimètres, largeur maxima 11 centimètres). Les deux autres sont plus petites (longueur 17,5 centimètres, respectivement 13,5 centimètres, largeur maxima 7,8 centimètres, respectivement 5,5 centimètres). La grande hache et une des petites sont plus ou moins bien polies. Le polissage est particulièrement soigné au niveau des tranchants. La troisième hache porte des traces de percussion. Vraisemblablement elle est restée inachevée.

Les ciseaux sont relativement petits, à coupe rectangulaire et à simple biseau. Les petits côtés et les faces sont à angle droit. La face postérieure est pourvue d'une rainure destinée à faciliter l'emmanchement (Pl. I: 6). C'est un des traits qui caractérisent les ciseaux propres à Formose.

Une des collections du Docteur Miyahara comporte les objets qu'il a exhumés en 1920.<sup>1)</sup> Ceux-ci proviendraient de "Kaizuka, Enzan, dans la cité de Taihoku". A en juger par une photographie conservée dans les archives du Musée des Antiquités d'Extrême-Orient, les objets semblent avoir été découverts au cours de travaux de terrassement, exécutés pour les fondations d'une maison ou pour quelque travail analogue. A une profondeur d'environ deux mètres un grand nombre d'assez grandes dalles ont été mises à jour. Il est pourtant difficile de dire quelle a pu être leur destination. Il n'existe aucun rapport ou note con-

<sup>1)</sup> Selon une note écrite en japonais, conservée dans les archives du Musée des Antiquités d'Extrême-Orient, les trouvailles en question ont été publiées par le Docteur Miyahara in *The Journal of the Anthropological Society of Tokyo*, mais il n'existe aucune indication relative à l'année de l'impression de son article. Je n'ai pu consulter ce mémoire qui n'existe pas, à ma connaissance, en Suède.

cernant les fouilles. Signalons pourtant qu'un grand bloc en pierre, reproduite sur une autre photographie, conservée dans les archives du Musée, est dénommé, à tort ou à raison, "la meule".

Cette collection, dénommée ici M I (cf. le tableau synoptique), comporte 49 objets divers.

En 1925 le Docteur Miyahara a découvert les 77 pièces qui constituent l'autre collection (M II), à laquelle nous venons de faire allusion. Ces objets proviennent, selon une indication écrite, de Mizusokoryo, Azumase, province de Taichu (dans la partie occidentale de l'île).

Ces deux collections qui peuvent être étudiées ensemble ici, comportent des objets de même nature, notamment des haches et des ciseaux.

Tous ces instruments sont plus ou moins bien polis. Les objets de petite taille témoignent d'un polissage très soigné. Les haches de grande taille, entières ou en fragments, sont à simple biseau ou à doubles biseaux. Il en existe six exemplaires dont cinq exécutés avec peu de soin. Au point de vue archéologique ils sont de peu de valeur. Nous en reproduisons un ici Pl. I: 7. La sixième hache, par contre, est d'un certain fini d'exécution. C'est une de ces haches dite à soie plate, carrée (angl. *shouldered celt*) et qui caractérise l'époque néolithique de l'Indochine. (Pl. I: 3.)<sup>1)</sup> Citons ensuite une hache de petite taille, à biseaux, en schiste noir et à coupe presque quadrangulaire; une autre petite hache à biseaux est effilée (Pl. I: 2).

Les ciseaux constituent un groupe très homogène, bien que leur grandeur varie légèrement. La plupart d'entre eux sont faits en schiste grise ou noire. Sept petits ciseaux sont en agate, en jade ou en roches analogues. Leurs formes varient. Les grands ciseaux ont les faces plates rectangulaires, Pl. I: 5, les petits ont les faces plates plus ou moins carrées, Pl. II: 9—11. Les petits côtés en sont polis et nettement délimités. Le talon est en général aussi poli, mais le polissage y est exécuté d'une façon moins soigneuse que celui des autres parties des ciseaux. Tous sont à simple biseau et la plupart d'entre eux sont pourvus, à la partie postérieure, d'une rainure ou d'un évidement destinés à faciliter l'emmanchement.

Les couteaux (Pl. II: 1) sont rares. Ils ne sont représentés que par trois exemplaires fragmentaires, tous appartenant à la collection M II. Ils sont polis, en schiste et perforés près du dos.

Il existe quelques pointes de lance en schiste grise ou noire. La forme en est lancéolée, les surfaces en sont en général soigneusement polies (Pl. II: 4). Dix pièces sont pourvues d'un ou de plusieurs trous d'attache, en général placés près d'un des rebords, Pl. II: 3, ou près de la pointe, Pl. II: 2. Un exemplaire est pourvu

<sup>1)</sup> Le Musée des Antiquités d'Extrême-Orient possède une hache en bronze (N:o 4083) datant de l'époque des Chou et provenant de l'ancienne collection Peter Bahr (Shanghai). La forme de celle-ci, Pl. I: 4, ressemble beaucoup à celle de la hache reproduite ici Pl. I: 3; la hache en bronze n'est pourtant pas pourvue d'une soie mais d'une douille.

de trois trous, placés l'un au dessous de l'autre, au milieu de la pointe. A la base nous voyons une barbelure, Pl. II: 1. Les exemplaires perforés ont encore pu être utilisés en guise de harpons.

Signalons, en passant, trois fragments de petites pointes de flèche, Pl. II: 13, en schiste et appartenant à la collection M II.

Il existe aussi dans cette même collection 31 objets en schiste et d'usage inconnu. La forme de ceux-ci varie légèrement, mais ce sont, la plupart du temps, des objets effilés et à coupe circulaire. Chaque extrémité est pourvue d'une rainure d'attache formant en général un cercle fermé, Pl. II: 8. Un des exemplaires porte seulement d'un côté cette rainure, Pl. II: 5. A en juger par la forme de ces objets, je serais plutôt portée à croire qu'ils ont été utilisés comme poids de filet, mais d'autre part il faut admettre qu'ils sont si légers que l'explication peut être sujette à caution. Alternativement on peut aussi penser qu'ils ont été portés comme amulettes ou comme pendeloques. De toute façon, une hache en miniature, Pl. II: 12 (cf. le tableau synoptique, objets divers) a vraisemblablement été utilisée comme pendeloque (M I).

Il y a aussi quelques restes insignifiants d'un certain nombre d'anneaux en terre cuite (M II), dont l'usage exact est incertain. La coupe en est rectangulaire ou circulaire. Celle du plus grand d'entre eux a un centimètre de diamètre, mais la plupart des anneaux sont plus minces. Ils sont trop petits pour avoir été utilisés comme bracelets par des adultes, si toutefois ils n'ont pas été mis sur le bras déjà pendant l'enfance.

Un fragment de bracelet(?), Pl. II: 7, est en roche néphritique.

Citons, pour terminer cette énumération, une fusaiole biconique en terre glaise non cuite mais simplement séchée au soleil. La surface en est très effritée (on y voit le sable dégraissant) et on a lieu de s'étonner que cet objet ait pu parvenir jusqu'à nos temps.

*Tableau synoptique.*

Collection	Provenance	Haches	Ciseaux	Couteaux	Pointes de lance	Pointes de flèche	Pendeloques	Anneaux en terre cuite et en roches diverses	Objets divers	Somme
Motoyama . . . . .	Taihoku . . .	3	2	—	—	—	—	—	—	5
Miyahara I = M I	Kaizuka . . .	6	36	—	4	—	—	—	3	49
Miyahara II = M II	Mizusokoryo	2	9	3	7	4	31	17	4	77
	Somme	11	47	3	11	4	31	17	7	131

Parmi les instruments qui caractérisent le mieux la civilisation à laquelle appartiennent les objets que nous venons d'énumérer, il faut signaler en premier lieu la hache dite à soie plate ou au tenon d'emmarchement, qui est très fréquente en Extrême-Orient.

Plusieurs savants ont démontré, notamment M. Heine-Geldern, que l'aire géographique de ce type de hache et celui des langues austro-asiatiques concordent.

Selon M. Heine-Geldern<sup>1)</sup> ce sont les peuplades mongoloïdes des Mon Khmers qui ont introduit en Extrême-Orient les langues austro-asiatiques et y ont aussi apporté la hache à soie plate. Celle-ci se rencontre presque partout sur le continent de l'Extrême-Orient. Dans l'Ouest elle se trouve jusque dans les régions des Mundas (Indes centrales), au Sud jusque dans l'isthme de Kra (Malacca), mais semble faire défaut dans la partie méridionale de la presqu'île Malaise. Elle est représentée au Yünnan,<sup>2)</sup> mais elle y est peu fréquente et n'y revêt pas sa forme la plus typique.

C'est aussi le cas de quelques haches de cette dernière forme, trouvées au Japon.<sup>3)</sup> A ma connaissance, on n'y en a trouvé que deux. Elles proviennent de la région habitée par les Aïnos et ont été exhumées dans deux localités qui se trouvent à une grande distance l'une de l'autre. Ces types ne dérivent pourtant peut-être pas directement de la hache à soie plate, dite austro-asiatique. Il faudra peut-être les rapprocher des houes dites en forme de violon,<sup>4)</sup> qui caractérisent la civilisation des Aïnos.

Il existe à Formose un type de ciseaux à doubles tranchants et à biseau simple. Munro (*Op. cit.*, p. 92, fig. 18: 4) en reproduit un parmi neuf autres objets provenant de l'île. Ces instruments doivent être rapprochés de ciseaux analogues trouvés au Japon. Nous reproduisons ici, Pl. X: 4, un outil semblable en porphyre, trouvé à Higo (Kiou-Siou).

Les ciseaux examinés précédemment (Pl. II: 9—11) peuvent être comparés à de menues haches en pierre qui caractérisent la civilisation néolithique de l'Indonésie orientale et qu'a distinguée, le premier, M. Heine-Geldern.<sup>5)</sup>

Des instruments de formes analogues sont également représentés dans la seconde civilisation Bacsonienne (Indochine).<sup>6)</sup> S'appuyant sur ces similitudes M. Menghin<sup>7)</sup> compare la civilisation néolithique de l'Indonésie orientale et la civilisation Bacsonienne et celle de Gurva-Kerbau (Indochine), auxquelles il faudra aussi, par conséquent, rattacher l'étage du néolithique de Formose que nous étudions ici.

<sup>1)</sup> M. Heine-Geldern cite, dans les *Mitteil. d. Anthropol. Ges. in Wien*, t. VII (1927), p. 47 (*Die Steinzeit Südostasiens*), les publications les plus importantes qui traitent du néolithique de l'Extrême-Orient. Cf. aussi H. Mansuy, *Contribution à l'étude de la préhistoire de l'Indochine* in *Mémoires du service géologique de l'Indochine*. R. Verneau, *Les récentes découvertes préhistoriques en Indochine* in *L'Anthropologie*, t. XXXV (1925), p. 47 (aperçu succinct).

<sup>2)</sup> Nobuhiro Matsumoto, *Le japonais et les langues austro-asiatiques*, Paris (1928), p. 33.

<sup>3)</sup> Munro, *Prehistoric Japan*, Yokohama (1911), p. 122; Matsumoto, *Op. cit.*, p. 33; Heine-Geldern in *Illustrierte Völkerkunde*, t. II, p. 760.

<sup>4)</sup> Cf. Munro, *Op. cit.*, p. 121.

<sup>5)</sup> *Op. cit.* Cf. aussi la carte reproduite in *Mitteilungen*, p. [52].

<sup>6)</sup> Mansuy, *Contribution*, t. IV, Pl. XI, fig. 3a—5.

<sup>7)</sup> *Weltgeschichte der Steinzeit*, Wien (1931), p. 82 sqs.

En Chine nous trouvons un type de hache analogue qui y a donné naissance au celt en métal, dit pen.<sup>1)</sup>

Munro cite (*Op. cit.*, p. 92, fig. 18: 5—8) quatre haches trouvées au Japon qui, à en juger par les reproductions, appartiennent à cette même famille.

Il existe aussi des similitudes entre les pointes de lance trouvées à Formose et quelques pièces exhumées en Indochine et en Chine. Ainsi p. ex. H. Mansuy reproduit<sup>2)</sup> trois pièces de ce type provenant de Binh-ca (Tonkin). Des lames de poignard de cette forme ont été trouvées également à Chi Chia P'ing (Kansu), 2 exemplaires, et à Yang Shao Tsun (Honan).<sup>3)</sup>

Les couteaux en pierre montrent peut-être que Formose a joué un certain rôle dans l'histoire des relations qui ont dû exister à l'époque néolithiques entre l'Asie continentale et le Japon. Signalons pourtant que les couteaux de ce type, trouvés au Japon, ont été exhumés exclusivement dans le Nord du pays.<sup>4)</sup>

En Chine cet outil doit être considéré comme un des produits industriels les plus caractéristiques et qui appartiennent à toutes les époques préhistoriques. Ils s'y transforment ultérieurement en couteaux de métal.<sup>5)</sup>

L'étage du néolithique de Formose que nous étudions ici présente certaines similitudes avec la civilisation préhistorique de la Chine et avec celle de Somrong-Sen (Indochine).

Parmi les produits industriels qui caractérisent le mieux la civilisation de Somrong-Sen, citons en premier lieu la hache à soie plate qui est représentée, comme nous venons de le dire, p. 106, par un exemplaire dans les matériaux de Formose que nous présentons ici. Ce type d'instrument peut servir de point fixe pour la chronologie. M. Heine-Geldern<sup>6)</sup> attire l'attention sur le fait que l'invasion des Mon Khmers dans la vallée du Gange offre un point de départ pour la chronologie absolue du néolithique austro-asiatique. Il dit à ce sujet:

"Selbstverständlich muss die Einwanderung der Mon-Khmer in Vorderindien vor der Eroberung des Gangeslandes durch die Arier stattgefunden haben, da sie ja gerade durch diese wieder auseinander gesprengt worden sind. Nun fällt das einstige austroasiatische Gebiet in Vorderindien gerade mit dem Gebiet der aus Westen gekommenen nord- und centralindischen Kupferkultur zusammen und wir werden jedenfalls mit einiger Berechtigung annehmen dürfen, dass die Einwanderung der Mon-Khmer mit ihrer neolithischen Kultur vor dieser indischen Kupferzeit stattgefunden hat. Wenn wir nun letztere unwarscheinlich spät um 1200 oder sogar um 1000 herum ansetzen so müssen wir für die Mon-Khmer-Einwanderung in Vorderindien als spätesten Zeitpunkt etwa die Mitte des zweiten Jahrtausends v. Chr. annehmen."

<sup>1)</sup> J. G. Andersson, *An Early Chinese Culture*, p. 7.

<sup>2)</sup> *Bulletin du service géologique de l'Indochine*, vol. VII, Pl. IV, fig. 4—6.

<sup>3)</sup> J. G. Andersson, *An Early Chinese Culture*, Pl. VI: 8—11. Menghin, *Op. cit.*, Pl. XXXIII: 7—10.

<sup>4)</sup> Munro, *Op. cit.*, p. 126.

<sup>5)</sup> J. G. Andersson, *Op. cit.*, p. 6 sqs.

<sup>6)</sup> *Mitteilungen*, p. [53].

Par conséquent nous avons lieu de penser que la diffusion hors de l'Indochine de la civilisation de Somrong-Sen a dû se produire *grosso modo* environ vers l'an 2000, au plus tard vers l'an 1500 avant Jésus-Christ. Si cette hypothèse est admissible, nous devons assigner la même date à la hache à soie plate, trouvée à Formose et du moins en partie à la civilisation néolithique de l'île.

Cette civilisation a-t-elle été introduite dans l'île dès cette époque par des Mon Khmers ou bien y a-t-elle été introduite seulement par voie d'échange? La question reste ouverte. Signalons néanmoins que des annales<sup>1)</sup> dont la rédaction remonte à l'époque de la dynastie des Suei (581—618) donnent les renseignements suivants au sujet de la population de cette époque. "Leurs yeux profonds, leur nez haut, les faisaient ressembler aux barbares d'Asie centrale, *hou*." Peut-être faut-il comprendre ce passage comme faisant allusion aux Mon Khmers qui ont été délogés, environ vers l'an 500 après Jésus-Christ, par des étrangers, venus des Phillipines. Cet évènement est consigné dans des documents écrits chinois<sup>2)</sup>. Le récit en a été transmis aussi oralement chez les habitants de Formose jusqu'aux temps modernes.

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<sup>1)</sup> Matsumoto, *Op. cit.*, p. 33.

<sup>2)</sup> Heine-Geldern in *Völkerkunde*, p. 760.

(Traduit par Olov Janse.)

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## **PLANCHE I**

PLANCHE I.

Grandeur  $\frac{1}{2}$ .

Tous les objets appartiennent au Musée des Antiquités d'Extrême-Orient, Stockholm.

1. Hache polie, à biseaux. Taihoku. N:o 4007: 89.
2. Ciseau poli, à biseaux. Kaizuka, Taihoku. N:o 10769: 37.
3. Hache polie à soie plate. Kaizuka, Taihoku. N:o 10769: 1.
4. Hache en bronze de la dynastie des Chou. Acquise chez feu Peter Bahr, Shanghai. N:o 4083.
5. Ciseau à biseau. La face postérieure est pourvue d'une rainure d'attache. Kaizuka, Taihoku. N:o 10769: 6.
6. Ciseau à biseau, pourvu d'une rainure d'attache. Taihoku. N:o 4007: 85.
7. Hache à biseau. Kaizuka, Taihoku. N:o 10769: 49.
8. Hache polie, à biseaux. Taihoku. N:o 4007: 87.





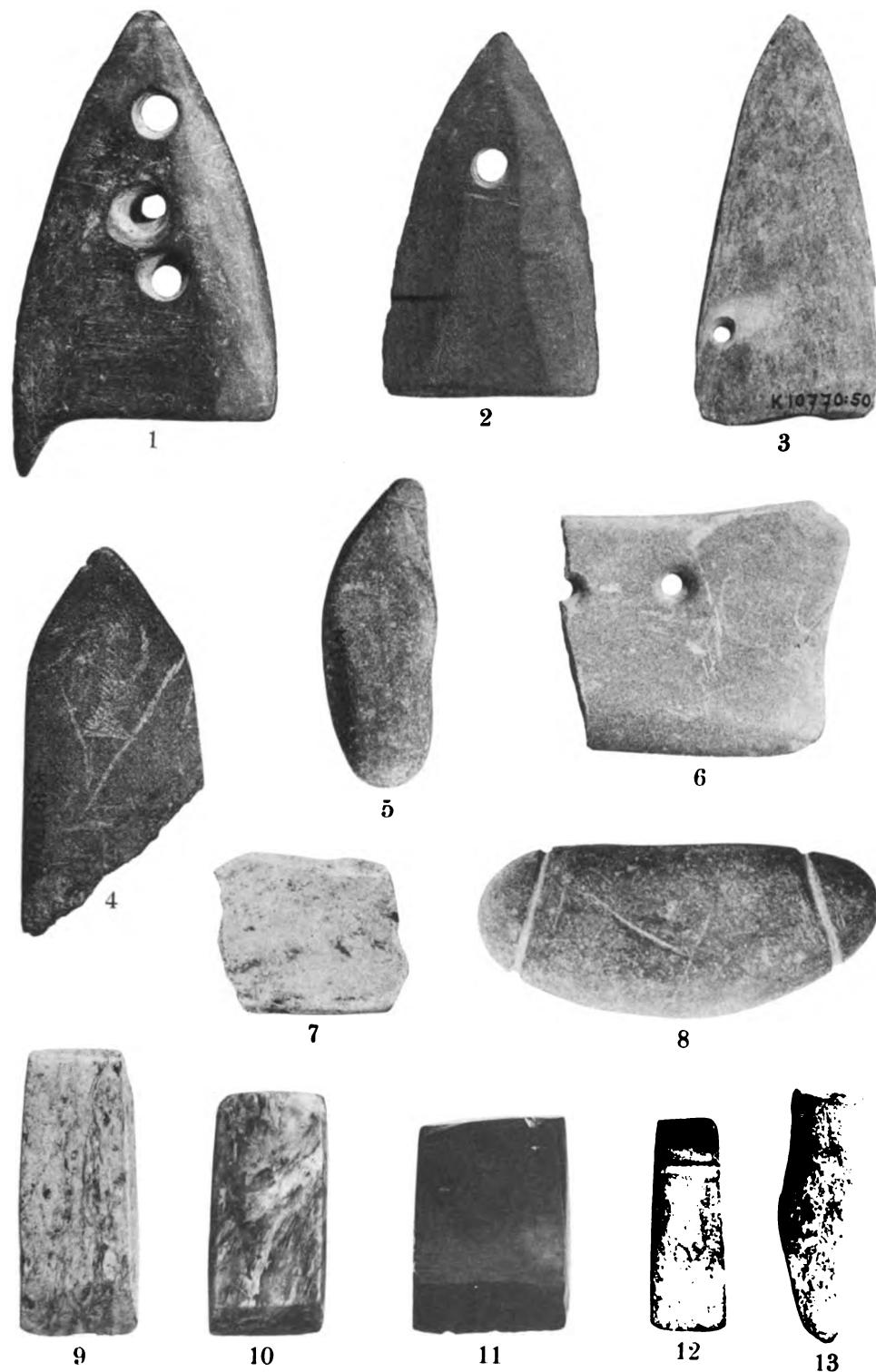
## **PLANCHE II**

## PLANCHE II.

### Grandeur réelle.

Tous les objets appartiennent au Musée des Antiquités d'Extrême-Orient, Stockholm.

1. Pointe de lance ou harpon pourvu d'une barbelure. Kaizuka, Taihoku. N:o 10769: 43.
2. Harpon ou pointe de lance. Kaizuka, Taihoku. N:o 10769: 42.
3. Harpon ou pointe de lance. Mizusokoryo, Azumase, province de Taichu. N:o 10770: 50.
4. Pointe de lance. Mizusokoryo, Azumase, province de Taichu. N:o 10770: 15.
5. Objet à destination incertaine (poids de filet?). Une des extrémités est pourvue d'une rainure d'attache. Mizusokoryo, Azumase, province de Taichu. N:o 10770: 33.
6. Fragment d'un couteau en pierre. Mizusokoryo, Azumase, province de Taichu. N:o 10770: 48.
7. Fragment d'anneau en roche néphritique. Mizusokoryo, Azumase, province de Taichu. N:o 10770: 45.
8. Objet à destination incertaine (poids de filet?). Chaque extrémité est pourvue d'une rainure d'attache. N:o 10770: 19.
9. Ciseau à biseau. Kaizuka, Taihoku. N:o 10769: 41.
10. Ciseau à biseau. Kaizuka, Taihoku. N:o 10769: 34.
11. Ciseau à biseau. Kaizuka, Taihoku. N:o 10769: 25.
12. Hache en miniature pourvue d'une rainure d'attache. Kaizuka, Taihoku. N:o 10769: 35.





# LES PLAQUES DE L'EMPEREUR DU CIEL

PAR  
PAUL PELLIO T

Parmi les nombreuses plaques en bronze de style animalier des nomades qui garnissent les armoires des Östasiatiska Samlingarna, un petit groupe tranche par une apparence plus plate et d'où la notion de volume est comme absente; on a l'impression d'un art animalier à deux dimensions au lieu de trois. Une de ces plaques (K. 10747 [fig. 2]) relève des thèmes traditionnels: lutte d'un quadrupède et d'un oiseau; mais trois autres offrent une particularité de sujet que je voudrais signaler ici brièvement.

Deux de ces trois plaques forment une paire (K. 11038, 3 et 4 [fig. 3]), le sujet de l'une étant, comme d'ordinaire, inversé sur l'autre; la troisième plaque (K. 11004, 26 [fig. 1]) a dû aussi appartenir à une paire; le sujet en est le même, mais est traité avec des différences de technique assez marquées.

Les deux plaques formant paire, avant d'entrer dans les collections de Stockholm, avaient appartenu à un antiquaire parisien, et elles ont été reproduites dans Strzygowski, *Asiens bildende Kunst*, p. 77, mais notre confrère de Vienne n'a pas vu ou n'a pas dit que l'une d'elles portait des caractères chinois; la publication du compte rendu où je mentionne cette plaque et auquel je fais allusion dans le *T'oung Pao* de 1931, 456, s'est trouvé ajournée jusqu'au *T'oung Pao* de 1932.

Ces deux plaques formant paire représentent une sorte de dragon marchant dont le haut s'épanouit respectivement en dix et neuf têtes placées l'une derrière l'autre et montées sur dix et neuf couss. Chacune des plaques comporte un cartouche aux caractères en relief, mais celui de la plaque à dix têtes est seul lisible: il porte très clairement 天皇 T'ien-houang, "l'Empereur du Ciel". La troisième plaque montre un animal très semblable, mais qui a douze têtes; cette plaque est simplement découpée et gravée au trait; le cartouche comporte des linéaments gravés qui semblent être plutôt une imitation de caractères chinois que des caractères proprement dits.

La notion des Empereurs du Ciel, de la Terre et de l'Homme, tous trois à têtes multiples, nous est connue par les textes. Dans son poème *Ling-kouang-tien fou*, Wang Yen-cheou, décrivant vers 130—140 de notre ère un palais princier du Chantong construit au milieu du II<sup>e</sup> siècle avant Jésus-Christ, y mentionne la représentation des "neuf têtes de l'Empereur de l'Homme" (人皇九頭 *jen-houang kieou-t'eoou*), et c'est bien en vain que vers 200 de notre ère, un glossateur rationaliste a voulu interpréter ce thème mythologique par "neuf générations d'Empereurs de l'Homme".<sup>1)</sup> Le 拾遺記 *Che-yi ki* de 王嘉 Wang Kia des Tsin

<sup>1)</sup> Cf. à ce sujet *T'oung Pao*, 1931, 455—456.

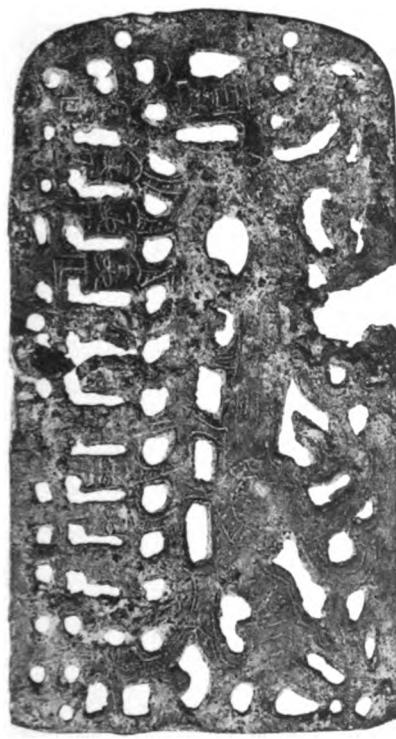
rappelle qu'autrefois il y eut l'Empereur de l'Homme qui avait un corps de serpent et neuf têtes (ch. 1, § 1: 昔者人皇蛇身九頭), et il est question des treize têtes de l'Empereur du Ciel et des onze têtes de l'Empereur de la Terre dans le 三五歷紀 *San-wou li-ki* de 徐整 Siu Tcheng, lequel date du milieu du III<sup>e</sup> siècle de notre ère.<sup>1)</sup>

Mais si nos plaques s'apparentent par suite à une conception bien attestée, le nombre des têtes qui, sur nos exemplaires, est respectivement de neuf, dix et douze, ne cadre pas avec la donnée littéraire qui prête, en particulier, treize têtes à l'Empereur du Ciel. J'incline cependant à penser que c'est lui qui apparaît dans tous les cas, et que l'irrégularité du nombre des têtes tient seulement à une tradition plus ou moins flottante, ou encore à la difficulté qu'éprouvaient les bronziers à placer treize coups et treize têtes sur le corps de l'Empereur quadrupède. La représentation d'une sorte de dragon à quatre pattes au lieu du serpent du *Che-yi ki* peut aussi s'expliquer par des hésitations entre les diverses espèces de serpents et de dragons.

De toute cette mythologie chinoise ancienne, nous savons encore peu de chose: le confucianisme l'a supprimée ou rationalisée. Mais nous voyons de plus en plus qu'elle était encore vivante dans l'âme populaire non seulement sous les Han, mais même au temps des Six Dynasties. C'est vers cette époque-là que j'inclinerais à situer les plaques de Stockholm, au III<sup>e</sup> siècle de notre ère par exemple. Elles représenteraient une adaptation à un thème chinois de motifs de l'art animalier des nomades. Cette adaptation a pu d'ailleurs, par un choc en retour, être acceptée à son tour par des nomades à peine fixés sur le sol chinois, et il n'est pas exclu que la plaque gravée au cartouche en apparence fantaisiste soit une imitation de plaque chinoise due à des gens qui ne savaient pas le chinois.

Ce motif du dragon à têtes nombreuses, disposées comme sur nos plaques, a d'ailleurs survécu assez longtemps. Dans une grotte de Touen-houang peinte dans la première moitié du VI<sup>e</sup> siècle, deux caissons du plafond nous le montrent. De l'un de ces caissons, je ne puis plus parler que d'après une photographie rapportée par M. d'Oldenburg et que j'ai vue naguère à Leningrad; j'ai malheureusement omis de noter le nombre des têtes. Sur l'autre caisson, reproduit par la planche CCLXVIII de mes *Grottes de Touen-houang*, le monstre a quatorze têtes humaines, disposées côte à côte comme sur nos plaques. Bien que les intermédiaires nous échappent et que la valeur de ce monstre polycéphale sur une peinture bouddhique nous reste obscure, l'analogie est évidente et le rapprochement s'impose.

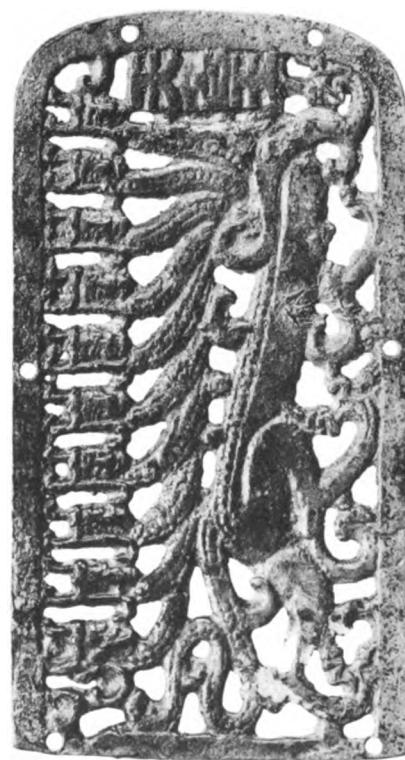
<sup>1)</sup> Cf. *T'oung Pao*, 1931, 466—467.



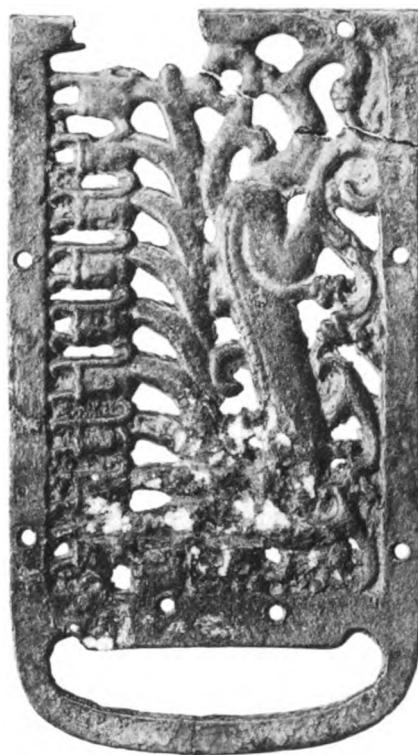
1



2



3a



3b



# S H I K I N G R E S E A R C H E S

BY

*BERNHARD KARLGREN*

Shi king, the Book of Odes, has been one of the principal objects of Chinese researches for two thousand years. One of the two oldest literary documents existing in the Far East, and moreover raised above every suspicion of being spurious, quoted by all leading men, from Confucius down to contemporary leaders, embodying much of the most valuable ancient lore of China, and a charming exponent of archaic Chinese literary taste, the Shi king has been extensively studied and commented upon by all the foremost scholars in China, from Han times down to the days of the Republic.

Shi king, however, cannot be said to be entirely disclosed to our understanding unless the archaic pronunciation of the characters is revealed, and the rimes of the poems are established in their real phonetic values. On the other hand, the study of the Shi king language from this point of view is one of the most important tasks incumbent on us, for if Sinitic linguistics are to make any headway at all, we cannot stop at the detailed reconstruction of »Ancient Chinese» (Ts'ie yün, 6th c. A. D.) — a task already solved — but we have to proceed to a reconstruction of Archaic Chinese, the language of the Chou era. And here the rimes in the archaic poetry, and notably the Shi king, are, together with the compound characters *hie sheng*, the principal material.

The rime system of the Shi king has been diligently studied by some of China's foremost scholars. The researches of Ku Yen-wu († 1681), good for their time, became antiquated through the epoch-making studies of Tuan Yü-ts'ai († 1815), especially in his Liu shu yin kün piao (Huang Ts'ing king kie k. 656—660; the rime indications in Legge's Shi edition are based on this); his follower K'ung Kuang-sen (Shi sheng lei, Huang Ts'ing king kie sü pien k. 194—205), though building essentially on Tuan, has worked out the system further. Thanks to Tuan we know almost exactly which are the real rime words in all the stanzas of the Shi, and, consequently, in which rime categories the words are to be distributed. But the final step, the fixing of the real sound values of these rimes, remains to be definitely done.

Attempts in this direction have not been lacking. Some light has been thrown

on certain fundamental points of archaic Chinese phonetics already in my *Analytic Dictionary of Chinese* (1926), where I established the existence of a series of final consonants, which have been dropped before the time of the *Ts'ie yün*, a result that was of paramount importance for the elucidation of the *Shi* king rimes. Walter Simon, in his »Zur Rekonstruktion der altchinesischen Endkonsonanten» (1928, 1929), followed up this idea of mine on an extensive scale. Various *Shi* king problems were again discussed in my long article »Problems in Archaic Chinese» (J. R. A. S. 1928) and in my »Tibetan and Chinese» (T'oung Pao 1931). Quite recently two Chinese scholars have entered the field with similar attempts to elucidate the *Shi* king phonetics: Lin Yü-t'ang in the *Bulletin of the National Research Institute of History and Philology* vol. II, part 2, and Li Fang-kuei *ibid.* vol. III, part 1. The latter even gives an extensive scheme of sound reconstructions for a considerable part of the *Shi* king rime categories.

In the present work I shall revert, once more, to the much-discussed question of the existence or absence of final gutturals in certain large categories of words and of the vocalism in these groups, and I shall base myself principally on the *Shi* king. In another article published simultaneously, »The poetical parts in *Lao-tsi*» (in *Göteborgs Högskolas Årsskrift*), I extend my researches to various other sources from Chou, Ts'in and Han times. As a result of my investigation here I propose a reconstructional scheme for the archaic readings of a major part of the Chinese vocabulary. I leave out of the discussion only the words ending in *Ts'ie yün* -*m*, -*n*, -*p*, -*t*, the archaic values of which are on the whole quite clear, and certain words ending in *Ts'ie yün* -*i*, the earlier phonetic garb of which is extremely doubtful and deserves a detailed examination; to these words I hope to revert on another occasion.

As a basis for our discussion I give on p. 160 below some tables showing the *Shi* rimes to be examined. The figures refer to the pages in Legge's edition. The *Mao Shi* version is followed throughout, but deviating readings in the *Lu*, *Han* and *Ts'i* versions are always indicated in parenthesis when they influence the rime — a precaution which *Tuan Yü-ts'ai* has unfortunately never taken. Rimes that recur in one stanza absolutely identical with those in an earlier one I leave out entirely.

For each table I give two columns of reconstructed readings. The one to the left is the *Ts'ie yün* language (6th c. A. D.); this is the language which forms the point of departure in our discussion. The one to the right is the *Shi* king language, such as I propose to reconstruct it in the present paper. This right-

hand column, therefore, should be disregarded entirely in the course of our discussion; it represents the final results of our inquiry.

In the tables I mark no forms with asterisks, but in the text of the article, for practical reasons, I indicate Ts'ie yün readings by italics without asterisks and Shī king readings by italics with asterisks. Thus **子** *tsi*, *\*tsiəg* means that the word (Pekinese *tsi*) was pronounced *tsi* in the 6th c. A. D. (Ts'ie yün) and *tsiəg* in the Shī king language.

\*

#### PRELIMINARY REMARKS ON THE FINAL CONSONANTS.

In my Analytic Dictionary I concluded final consonants in cases like **怕** *p'a'* (phonetic **白** *b'vk*), **例** *liəi'* (phon. **列** *liät*). I proposed there the simple rule that the consonants lost before the time of Ts'ie yün were all *mediae* (*p'ag*, *liäd* etc.), whereas those that were preserved (*»ju sheng«*) were *-k*, *-t* (*b'vk*, *liät*). In my *»Problems in Archaic Chinese«* (1928) I modified my reconstruction to the effect that the former category also had *-k*, *-t*, but that the falling inflexion (*k'ü sheng* melody) obtained in these words already in Archaic Chinese: **怕** *p'ak*, **例** *liät'*, and that it was this falling tone which caused the said final consonants to drop before Ts'ie yün, whereas the *recto tono* **白** *b'vk* and **列** *liät'* preserved their *-k*, *-t*. Li Fang-kuei has rejected this reconstruction, without, however, giving any reasons for so doing, and keeps to my earlier theory. I shall therefore repeat here my arguments for it with the addition of some new material.

A. Kia-tsie like **害** for **曷**, or **載** for **則** are more comprehensible if we reconstruct thus: **害** *\*g'āt'* for **曷** *\*g'āt'*, **載** *\*tsxk'<sup>1</sup>* for **則** *\*tsək'*, than if we assume *\*g'ād* for *\*g'āt'*, *\*tsxg* for *\*tsək'*. This is not a conclusive proof, since characters are sometimes used *»kia tsie«* for phonetically somewhat diverging syllables, but together with the following proofs it is none the less suggestive.

B. Double readings of one and the same character (variation in the word stem) become much more reasonable if we accept a final *-k* with falling tone:

**度** *d'āk* and *d'uō'* < *\*-k'*

**覆** *p'iuk* and *p'iəu'* < *\*-k'*

**塞** *sək* and *səi'* < *\*-k'*

There are many cases like these, see p. 138 below.

<sup>1</sup>) The vocalism of the syllable will be discussed presently.

C. The decisive proof, however, is this. In the »hie sheng« characters of the type 恐 (白) we find, in 95 cases out of 100, that the member which lacks final consonant in Ts'ie yün has the falling tone: 恐 *p'a*: 白 *b'vk*. There are exceptions to this rule: 高 *kāu*: 高 *χāk*, but they are few. We know, however, from rimes in Shī king and other archaic works, that a great many words in »p'ing sheng« and »shang sheng« also had final consonants (cf. below), e. g. 來 *lāi* riming with 來 *kiək*, 子 *tsi* riming with 德 *tək* (see table III below). Now, if both these *lāi*, *tsi*, and the »k'ü sheng« word 恐 *p'a*, had *-g* (or if they all had *-k*), there is no reason whatsoever why only those in the falling tone (k'ü sheng) should regularly go together with »ju sheng« words in the phonetic compounds (type 恐), and those in »p'ing cheng« and »shang sheng« only in a few exceptional cases (type 高). The necessary conclusion is that the former: 來 *lāi*, 子 *tsi* had a final consonant (*-g*: *lxg*, *tsxg*) different from the *-k* of the »ju sheng« words, and therefore were only rarely mixed up with the latter by the creators of »hie sheng« characters; but that words like 恐 *p'a*, 例 *liəi*, phonetic compounds of a type that is extremely common, accorded better than the former with the »ju sheng« words and therefore had *-k*, just like the latter (白 *b'vk*): 恐 *\*p'ak*. When we have scores of cases like 恐 *p'a* (phon. 白 *b'vk*), 赶 *p'iuk* (phon. ト *puk*), we must reconstruct 恐 *\*p'ak* (here a short-vowelled *\*p'vk*, see further below) and 赶 *\*p'iuk* and not *\*p'ag*, *\*p'iug*, for if we accepted the latter, we could never explain why the great group of types 來, 子 practically never go together with »ju sheng« words (Ts'ie yün *-k*) in the »hie sheng« characters, which they ought to do just as well as 恐, 赶 etc. if the latter were really *\*p'ag*, *\*p'iug* and not *\*p'vk*, *\*p'iuk*. We therefore arrive at the following scheme:

Chou:	Suei:	Chou:	Suei:
白 <i>b'vk</i>	<i>b'vk</i>	怕 <i>p'vk</i>	<i>p'a</i>
來 <i>lxg</i>	<i>lāi</i>	賚 <i>lxg</i>	<i>lāi</i>

In other words:

\*-k remains *-k* in words with the even inflexion, but falls (or is vocalized) in words with the falling inflexion;

\*-g falls (or is vocalized) in words with both inflexions.

The obvious consequence is that if we have a word which has »k'ü sheng« (falling tone) in Ts'ie yün and which rimes with *-k* in the Shī, e. g. 到 *tāu*: 樂 *lāk*, we are at a loss whether to reconstruct *-k'* or *-g'*, since both should give *tāu*.

before the time of Ts'ie yün. Our decisions from case to case (according as the »ju sheng« connections of the word are frequent or not) can only be approximately safe. Only Sinitic comparisons will give us the exact answer in future.

\*

### THE TS'IE YÜN FINALS *-ai*, *-i*, *-i<sub>2</sub>u* OF TABLES III AND IV AND THEIR ARCHAIC VALUES.

Among Western sinologues Walter Simon was the first to propose an Arch. final guttural in the words of these tables. He was undoubtedly right. I took up (J. R. A. S. 1928 p. 802) his idea (with a considerable modification: *-k* and *-g*, according to special rules, as against Simon's *-y*) and supported it with the Shi king rimes reproduced in table III below, where both *-ai*, *-i* and *-i<sub>2</sub>u* frequently rime with *-ək*, *-iək*, *-iuk*. These cases in the Shi are by no means isolated. Everywhere in the Archaic literature we find examples of this kind, even as late as the beginning of our era (in the Yi lin of Wang Mang's time; see the last section of the present article). A few examples will suffice to show this:

1 疑德福 2 福母 3 食來祀 4 得戒 5 子克 6 訾殖嗣 7 司職 8 朱直  
 翼得 9 側佑 10 戒得 11 有恃宰德 12 事德 13 覆載 14 博得 15 時極 16 母  
 式息 17 得已 18 德疣 19 賜職治備 20 載默極 21 戒得 22 起始來德 23 食  
 耻 24 治職 25 已止職 26 期息事治 27 有得持 28 食誨 29 之德辭事備 30  
 來事極起母 31 服備異媒喜 32 殖誨嗣 33 子服稷 34 偏側國 35 覆載 36  
 備惑飾匿伺餌 37 覆載使偏 38 熙德尤治 39 時德 40 德服職代 41 喜亞

1. *ngji*: *tək*: *piuk* Shu king, Hung fan; 2. *piuk*: *məu* Yi king hexagr. »tsin»; 3. *dz'iək*: *lāi*: *zi* ibid., hexagr. »k'un»; 4. *tək*: *kai* ibid., section »Siang», »chen»; 5. *tsi*: *k'ək* ibid., hexagr. »ta yu»; 6. *xuāi*: *zək*: *zi* Tso chuan, Siang 31; 7. *si*: *təiək* Ta Tai li, Ai kung wen wu i; 8. *lāi*: *d'zək*: *zək*: *tək* Mencius, T'eng Wen kung (Legge p. 128); 9. *tsiək*: *jəu* Ch'u ts'i, T'ien wen; 10. *kai*: *tək* ibid. Si wang ji; 11. *jəu*: *zəi*: *tsəi*: *tək* Lao-ts'i 10; 12. *dz'i*: *tək* ibid. 63; 13. *p'iuk*: *tsəi* Chuang-ts'i, Tê ch'ung fu p'ien; 14. *xuāi*: *tək* ibid., Ta tsung shi p'ien; 15. *zəi*: *g'iək* ibid.; 16. *məu*: *tək*: *siək* ibid.; 17. *tək*: *i* ibid., Ying ti wang p'ien; 18. *tək*: *jəu* ibid., P'ien mu p'ien; 19. *si*: *tsiək*: *d'i*: *b'jwi* ibid., Tsê yang p'ien; 20. *tsəi*: *mək*: *g'iək* ibid.; 21. *kai*: *tək* Sun-ts'i, Kiu ti p'ien; 22. *k'ji*: *si*: *lāi*: *tək* Sün-ts'i, K'üan hüe p'ien; 23. *dz'iək*: *t'i* ibid., Jung ju p'ien; 24. *d'i*: *tsiək* ibid.;

25. *i*: *tsi*: *tsiək* ibid., Kün tao p'ien; 26. *kji*: *siək*: *dʒ'i*: *d'i* ibid., T'ien lun p'ien; 27. *jíz*: *tək*: *d'i* ibid., Cheng lun p'ien; 28. *dʒ'ək*: *χuái* ibid., Li lun p'ien; 29. *tsi*: *tək*: *zi*: *dʒ'i*: *b'jwi* ibid., Ch'eng siang p'ien; 30. *lái*: *dʒ'i*: *g'jək*: *k'ji*: *mzu* ibid., Fu p'ien; 31. *b'juk*: *b'jwi*: *i*: *muái*: *χji* ibid.; 32. *ɛjək*: *χuái*: *zi* Lü shi ch'un ts'iu, Huei kuo p'ien; 33. *tsi*: *b'juk*: *tsiək* Han Fei-tsī, Ai ch'en p'ien; 34. *b'jwi*: *tsiək*: *kwək* ibid.; 35. *p'juk*: *tsái* ibid., Ta t'i p'ien; 36. *b'jwi*: *ywək*: *ʃjək*: *niək*: *si*: *néi* ibid., Wai ch'u yu shang p'ien; 37. *p'juk*: *tsái*: *si*: *b'jwi* Huai-nan-tsī, Yüan tao p'ien; 38. *χji*: *tək*: *jíz*: *d'i* ibid., Shu chen p'ien; 39. *zi*: *tək* ibid., Lan ming p'ien; 40. *tək*: *b'juk*: *tsiək*: *d'ai* ibid.; 41. *χji*: *kiək* Ts'ien Han shu, Kuang ling wang chuan.

The list could easily be continued. There are moreover about 40 examples below (p. 173) drawn from the Yi lin (first years of our era).

In these rimes of Shī king and other Archaic texts we find that, whereas various *-i* words frequently rime with *-ək*, *-juk*, the *-ái* is represented mainly by the words **𠙴** and **來**, and this might make us suspicious against the idea of a final guttural in all the numerous *-ái* words in table IV. But it should be observed that both for *-ái* and for *-i* the »hie sheng» characters and characters with double readings give ample support for the final guttural:

1. 玄効効 2. 背北 3. 代弋弋 4. 塞 5. 紙 6. 糜黑 7. 寺侍特等 8. 𢃤國 9. 疑礙礙 10. 而耐恧 11. 乃仍 12. 能 13. 吳翼 14. 食飭 15. 意憶 16. 喜喜喜 17. 里里 18. 𠙴𠙴 19. 值直 。

1. *γái*: *yək*: *k'ək*; 2. *puái*: *pək*; 3. *d'ai*: *iək*: *t'ək*; 4. *sái*, *sək*; 5. *d'ai*, *d'ək*; 6. *muái*: *xək*; 7. *zi*: *d'ai*: *d'ək*: *təng*; 8. *kuái*: *kwək*; 9. *ngji*: *ngái*: *ngiəng*; 10. *néi*: *nái*: *níək*; 11. *nái*: *níəng*; 12. *nái*, *nəng*; 13. *i*: *iək*; 14. *zi*: *siək*; 15. *i*: *iək*; 16. *χji*: *χiək*; 17. *lji*: *t'iək*; 18. *tsiək*; 19. *d'i*: *d'jək*.

There can consequently be no doubt whatever about the existence of an Archaic final guttural in all the *-ái*, *-i* discussed here.

Lin Yü-t'ang, in his article mentioned above, has tried a totally different way of interpreting these finals. He supposes that *-i* derives from an Arch. *-ə*, and *ái* from an Arch. *-əu* (development like that of *eu* in German: *əu* > *oi*, and then delabialized: *oi* > *ái*), which might explain the Shī rimes in *-jíz* (\*-iəu; table IV). But his theory falls to the ground because it fails to explain, first, the Shī rimes with »ju sheng» (table III) and the other archaic rimes adduced on p. 121 above; and, secondly, the »hie sheng» characters and double readings just mentioned: double forms like 4. *\*səu* and *sək*, and »hie sheng» like 9. *\*ngü*: *\*ngəu*: *\*ngiəng* could never do.

So much for the existence of an Arch. final guttural. We have now to define its nature, and also to study the vocalism of the syllables in question. I have done so already in my »Tibetan and Chinese» (T. P. 1931 p. 63 ff.), but I should like to revert to the question more in detail.

In the article quoted I established (partly building on A. Dragunov, T. P. 1928) an Arch. phonetic system in which there was a regular parallelism between long-vowelled word-groups with an »a» vocalism and short-vowelled word-groups with an *ə* and an *v* vocalism. Let us study this system in the words ending in *-m* and *-n*:

Archaic values (Shī, hie sheng):	long	short
Ist division of the Sung rime tables	甘 kām	干 kān
IIId	監 kam	𠙴 kan

Archaic values (Shī, hie sheng):	long	short
Ist division	甘 kām	干 kān
IIId	監 kam	𠙴 kan

Whereas the long Archaic vowels (*ā* grave, *a* aigu) have been left intact, the short vowels have been considerably changed. Before *-m* (but not before *-n*) *ə* has become a short *ā* (*ā*), and the short *vn*, *vn* have become *əm*, *ən* (with short *a* aigu).

This theory of mine, established for palaeographic and other reasons, we can now test on the Shī rimes of table XVI. We see immediately that it explains the rimes there beautifully, as soon as we substitute there our Arch. *-əm* for the Anc. *-ām*. It is a highly interesting fact that Li Fang-kuei, in his above-mentioned paper, has drawn exactly the same conclusions (as far as *\*əm* > *-ām* is concerned; not in regard to the *\*vn*) as I had done in the T'oung Pao. His article appeared only a few months after mine, and he has evidently arrived at the same result quite independently.

We have seen that our law *\*kəm* > *kām*, *\*kəp* > *kāp* fully explains various phenomena in the »hie sheng» characters and in the Shī rimes and therefore can be regarded as definitely established. Now, in the Ts'ie yün finals 台 and 泰 I have already established (Phonologie Chinoise p. 633) an undeniable difference of quantity, as clearly revealed by Sino-Korean (the former spelled *-āi*, the latter *-ai* in the old Korean spelling system). The former was short, thus *-āi*, the latter was long, thus *-ai*. And, since we thus have definite proofs that the *ā* in the former category did not belong to the group of Arch. finals with long principal vowel (Arch. *ā*, *a*) but to the group with short principal vowel (Arch.

*ə, v*), we have every reason to expect that our *ä* here, just as in Ts'ie yün *-äm*, *-äp*, derives from an Arch. *ə*. A table of all the possible Arch. syllables with guttural finals after *ə* can then easily be given:

Archaic (Shī, hie sheng):

增 <i>tsəŋ</i>	徵 <i>tiəŋ</i>
則 <i>tsək'</i>	直 <i>d'iək'</i>
載 <i>tsək'</i>	值 <i>d'iək'</i>
災 <i>tsəg</i>	子 <i>tsiəg</i>

Ancient (Ts'ie yün):

增 <i>tsəŋ</i>	徵 <i>t'iəŋ</i>
則 <i>tsək</i>	直 <i>d'iək</i>
載 <i>tsəi'</i>	值 <i>d'i'</i>
災 <i>tsəi</i>	子 <i>tsi</i>

From this table we learn one more fact of considerable interest. Since *ə* is preserved before the gutturals *-ng* and *-k*, we cannot suppose that it was changed into *ä* before the guttural *-g*. A law *\*tsəg* > *tsäg* is out of the question. We understand that first 輽 *\*tsək'* and 災 *\*tsəg* have become *tsəi*, through vocalization of the final guttural, and then *tsəi* has gone on to *tsəi*, just as *\*kəm* > *käm*. That is the reason why the transition *ə* > *ä* has taken place only in the words in which the final *\*-k'* and *\*-g* have turned into Ts'ie yün *-i*. Words with preserved *-ng*, *-k* (types 增 *tsəŋ*, 則 *tsək*) have their *ə* intact.

These reconstructional laws were indicated briefly in my »Tibetan and Chinese«, and already there I pointed out that they were valuable for explaining the Shī rimes in table III. Here, again, Li Fang-kuei has arrived, only a few months after me and independently of my results, at exactly the same conclusions as regards the categories 來 *lai* < *\*ləg* and 子 *tsi* < *\*tsiəg*; he has adopted my earlier (J. R. A. S. 1928) expressed view of their final *-g* (as against Lin Yü-t'ang) and correctly drawn the parallel *\*əm* > *äm* = *\*əg* > *äi*; he has equally established the same evolution *\*tsiəg* > *tsiəg* > *tsi*, that I had done. It is gratifying to find that two students of these extremely complicated reconstructional questions arrive at exactly the same results independently of each other. Only in regard to the contrast in final: 輽 *\*tsək'*: 來 *\*ləg* has Li not fully realized the necessity of making a distinction (see p. 120 above).<sup>1)</sup>

The truth of our vowel theory: *\*ə* > *ä* in the words here discussed is confirmed by the »hie sheng« characters on p. 122 above (some of which were already adduced by Li). Their Arch. values will be:

<sup>1)</sup> Li has also pointed out that the curious use of 能 *nəŋ* for 而 *nəi* in certain Archaic documents (see Wang Yin-chi, King i su wen 5) becomes intelligible if we introduce the Arch. value 而 *\*niəg*. This is a correct and valuable observation. We might add that 而 *nəi* and 而 *nəi*, very akin in their grammatical functions, are probably cognate words: 而 *\*nəg*, 而 *\*niəg*.

1 真勑刻 2 背北 3 代弋式 4 塞 5 級 6 檻黑 7 寺侍特等 8 國國 9  
疑礙凝 10 而而恧 11 乃仍 12 能 13 吳翼 14 食節 15 意憶 16 喜喜 17 里堇  
18 戲戲 19 值直。

1. *g'əg*: *g'ək*: *k'ək*; 2. *puək*: *pək*; 3. *d'ək*: *d̥iək*: *t'ək*; 4. *sək*, *sək*; 5. *d'ək*,  
*d̥'ək*; 6. *muəg*: *χək*; 7. *dz'iəg*: *d'əg*: *d̥'ək*: *təng*; 8. *kwək*: *kwək*; 9. *ngiəg*:  
*ngəg*; 10. *niəg*: *nəg*: *n̥iək*; 11. *nəg*: *n̥iəng*; 12. *nəg*, *nəng*; 13. *giək*:  
*giək*; 14. *dziək*: *śiək*; 15. *iək*: *iək*; 16. *χiəg*: *χiək*; 17. *liəg*: *t'iək*; 18.  
*t'iək*: *t'iək*; 19. *d'iək*: *d'iək*.

There is, however, another and absolutely conclusive Shī king fact, which makes our reconstruction (\*ək', \*əg > əi; \*iək', \*iəg > i) certain. It is necessary to take it up, for it helps us to understand the nature of the enigmatic -iəu (𠂊, 有 etc.) with which these \*ək', \*əg, iək', iəg constantly rime ((see table IV). The examination of this phenomenon necessitates a long digression.

If the reader will consult our tables I, II and VIII, IX below, he will find that there are two categories of iung, iuk which never mix:

1 弓雄 2 夢 3 團 4 圓 5 或 6 福 7 服 8 伏 9 牧。

10 宮 11 舉 12 中 13 戲 14 豐 15 翁 16 煙 17 祝 18 六 19 復 20 覆。

A. 1. *kiung*, 2. *yiung*, 3. *miung*, *mung*, 4. *jiuk*, 5. *iuk*, 6. *piuk*, 7, 8. *b'iuk*, 9. *miuk*;  
B. 10, 11. *kiung*, 12. *t'iung*, 13. *niitung*, 14. *p'iung*, 15. *kiuk*, 16. *iuk*,  
17. *tsiuk*, 18. *liuk*, 19. *b'iuk*, 20. *p'iuk*.

These two groups cannot have had an identical archaic final, since they never rime. Either 弓, 服 were not *kiung*, *b'iuk* but something else, and 宮, 復 were *kiung*, *b'iuk*. Or 弓, 服 were *kiung*, *b'iuk*, and 宮, 復 were not *kiung*, *b'iuk* but something else.

Li Fang-kuei has tried the former solution, explaining 弓 as Arch. \*kiuəng, since it rimes with -əng, -iəng (table I) and 服 as \*b'iəuk, since it rimes with -ək, -iək (table II). But this is not allowable. There are already »ho k'ou« words corresponding to -əng, -iəng, -ək, -iək, and these »ho k'ou« words have by no means lost their ə; many of them occur as rime words in tables I and II:

1 肱 2 弘 3 瓢 4 國 5 或 6 翁 7 烟或𦵹或𦵹 8 沔𦵹𦵹𦵹 9 福福  
10 復福福。

1. *kwəng*, 2. *ywəng*, 3. *χwəng*, 4. *kwək*, 5. *ywək*, 6. *b'wək*, 7. *iwək*, 8. *χiək*,  
9. *p'iək*, 10. *b'iək*.

The double readings of the word 雲: *p'iwək* and *b'iuk* are clearly distinguished in the Kuang yün. There is, indeed, no possibility of assuming 𠂔 \**kiwəng* > *kiung*, 服 \**b'iwək* > *piuk*. It would not help us much to assume two kinds of »ho k'ou« with the same principal vowel: 雲 \**p'iwək* but 服 \**b'iwək*, for this would be far too artificial and unlikely. There is regularly only one kind of »ho k'ou« with every final in the Ts'ie yün.<sup>1)</sup> Our conclusion cannot be but one. 𠂔 was simply *kiung* and 服 simply *b'iuk*, just as in Ts'ie yün. If *kiung*: *tsəng*: *iəng* rimed (table I), it was because *ung* and *əng* were felt to be acoustically sufficiently similar to allow of a rime.

We have necessarily to conclude, then, that the other *iung*, *-iuk* group (宮 etc., B above) had not *iung*; *-iuk* in Arch. Chinese. And that is really what we should expect, if we examine tables VIII and IX. The very fact that such phonetically different finals as *-ung*: *-iung*: *-iəng* (à an open o like Engl. *law*) rime might seem suspicious; but this is not very conclusive. There is another far more significant fact. It is not the rime *-uong*, *-iung*: *-iəng* that is the common one, and *-ung*, *-iung*: *-iəng* that is rare — which would be the natural thing if Shī king had the same values in these groups as Ts'ie yün. On the contrary, the former is very rare, whereas *-ung*, *-iung*: *-iəng* is a quite frequent rime in the Shī. The interpretation of this can either be that 降 *yāng* was not Arch. \**g'āng* but a closer-vowelled final; or that 公 *kung*, 宮 *kiung* were not Arch. \**kung*, \**kiung* but had finals with a more open vowel, i. e. some kind of o. The latter alternative becomes probable already by the fact just studied: the contrast to 𠂔 (\**kiung*). And it is easily proved by a reference to the dialect differences already in the Ts'ie yün era, as revealed by the »foreign dialects«. Let us draw up a table:

	Go-on	Kan-on	Korean	Ts'ie yün
公	<i>ku</i>	<i>kou</i>	<i>kong</i>	<i>kung</i>
龍	<i>ru</i>	<i>rou</i>	<i>nong</i>	<i>lung</i>
送	<i>su</i>	<i>sou</i>	<i>song</i>	<i>sung</i>
蓬	<i>bu</i>	<i>pou</i>	<i>pong</i>	<i>b'ung</i>
谷	<i>koku</i>	<i>koku</i>	<i>kok</i>	<i>kuk</i>
祿	<i>roku</i>	<i>roku</i>	<i>nok</i>	<i>luk</i>

<sup>1)</sup> With one exception, according to my reconstructive scheme of the Ts'ie yün language; but this reconstruction of 𢂔 *jiuēn*: 𩙹 *jiwēn* (in order to explain two different rimes) in my Phonologie is certainly one of the weakest points of my reconstructive system. It is improbable and needs to be reconsidered.

獨	<i>doku</i>	<i>toku</i>	<i>tok</i>	<i>d'uk</i>
木	<i>moku</i>	<i>boku</i>	<i>mok</i>	<i>muk</i>
宮	<i>ku</i>	<i>kiu</i>	<i>kung</i>	<i>kiung</i>
隆	<i>riu</i>	<i>riu</i>	<i>riung</i>	<i>liung</i>
豐	<i>fu</i>	<i>pou</i>	<i>p'ung</i>	<i>p'iung</i>
菊	<i>koku</i>	<i>kiku</i>	<i>kuk</i>	<i>kiuk</i>
祝	<i>soku</i>	<i>siuku</i>	<i>ts'uk</i>	<i>tsiuk</i>
陸	<i>roku</i>	<i>riku</i>	<i>riuk</i>	<i>liuk</i>
肅	<i>soku</i>	<i>siuku</i>	<i>suk</i>	<i>siuk</i>
覆	<i>poku</i>	<i>puku</i>	<i>pok</i>	<i>p'iuk</i>
目	<i>moku</i>	<i>boku</i>	<i>mok</i>	<i>miuk</i>

For reasons expounded in my Phonologie Chinoise p. 686 ff. and *passim*, there can be no doubt whatever that words like 宮, 隆 were Ts'ie yün *kiung*, *liung*, rime 東 (宮 Kan-on *kiu*, Korean *kung*, Wenchou dialect *tsiung*) as opposed to 恭 *kiwong*, 龍 *liwong*, rime 鐘 (恭 Kan-on *kiyou*, Korean *kong*, Wenchou *tsüa*). And as all the words 公, 龍 etc. of our table above are incorporated, by the Ts'ie yün, in the same rime (東), it is certain that they were pronounced *kung*, *lung* etc. in the Ts'ie yün language (Ch'ang-an). But, as I have pointed out in my Phonologie (p. 668, p. 894 etc.), there must have been, even in Suei time, a great difference between various dialects in regard to these word groups, and we arrive at different systems due to a contrast p'ing sheng: ju sheng (*kung*: *kuk*) and to a contrast in initials (*kung*: *pung*). If we call the Ts'ie yün dialect A, the dialect that is the basis of Kan-on and Korean B, and the one that is the basis of Go-on C, we obtain:

Dial. A. 公 *kung* 篷 *b'ung* 谷 *kuk* 木 *muk* 宮 *kiung* 豐 *p'iung* 菊 *kiuk* 目 *miuk*;  
 Dial. B. *kong* *b'ong* *kok* *mok* *kiung* *p'iong(?)* *kiuk* *miok(?)*;  
 Dial. C. *kung* *b'ung* *kok* *mok* *kiung* *p'iung* *kiok* *miok*.

When we find that even in the 6th and 7th centuries there were considerable dialects that had *o* in greater or smaller categories of the Ts'ie yün rimes 東, 屋 both with and without medial *i*; when we know that the words of these categories in Shi king rime freely with -*uong*, *iwong*, and even with -*ang*; when, moreover, we know that they had a different final than the -*iung*, -*iuk* of tables I, II below;

then we can safely conclude that they had some kind of *o* in Archaic Chinese, and we have to establish the following scheme:

Open *o*: k'ai k'ou 降 \*g'āng; ho k'ou 冬 \*tuong, 恭 \*kiwong;  
Narrow *o* (ō): 公 \*kong, 宮 \*kióng.

The former preserved their vocalism down to Ts'ie yün time. The latter, by a gradual narrowing of the labialization, became 公 *kung*, 宮 *kiung* in certain dialects (a. o. the Ts'ie yün dialect). This evolution *kong* > *kung* is quite natural and has many parallels. Anc. Swedish *ko*, *sol*, *skog* are now pronounced *ku*, *sul*, *skug* (though still written in the ancient fashion). That Arch. 公 \**kong*, 宮 \**kióng*, 中 \**tióng* rimed with 降 \**g'āng* etc. even more freely, in the Shī, than did types 冬 \**tuong*, 恭 \**kiwong*, is due to the greater similarity in syllable type between \**kong*: \**g'āng* (both *k'ai* *k'ou*) than between \**tuong*: \**g'āng*.

Having solved the riddle of tables VIII and IX, we now revert to the words that started our discussion: tables I—IV. We can now safely maintain the values 巳 \**kiung*, 服 \**b'iuk*, since we have proved 宮 and 復 to have been Arch. \**kióng*, \**b'iok*.

We have in table II a triad of finals: -ək: -iək: -iuk which constantly interchange in the Shī rimes, but which have practically no connection with other groups in -k (Ts'ie yün -ək, -ək, -iak, -uk, -iuk, -uok, -iək, -iək).

But there is one category with which they do interchange, a large group, the final guttural of which is clear beyond question (table III), the words of types 來 *lai*, 子 *tsi*, 有 *jiu*. The three finals of these types not only rime with one another: *tsi*: *lai*; *tsi*: *jiu*; *lai*: *jiu* (table IV), but we frequently find rimes of the type *tsi*: *tək*; *lai*: *tək*: *b'iuk* (table III), which shows us, beyond the possibility of a doubt, that -əi: -i: -iəu are closely allied to -ək: -iək: -iuk and stand to each other exactly as -ək: -iək: -iuk stand to each other; there is a parallelism. 來 *lai* has obviously had neither medial *i* nor »ho k'ou« and therefore corresponds to -ək, 子 *tsi* has evidently had *i* as the first element of the final and therefore corresponds to -iək; the third, 有, is the only one that embodies a *u* and therefore corresponds to -iuk. Hence we obtain the following parallel:

得 \**tək* 亟 \**kiək* 圜 \**giuk*  
來 \**ləg* 子 \**tsiəg* 有 \**giug*

I wish to emphasize that by this investigation we have arrived at exactly the same archaic value for 來 \**ləg* and 子 \**tsiəg* as we obtained on p. 124 above,

but now by a totally different method and with entirely new arguments. I therefore consider the values \**ləg*, \**tsiəg* to be definitely established.

One great advantage of our last investigation is, moreover, that the archaic value of the much-discussed category 有 *jiəu*, 否 *pīəu* is revealed. Simon had assumed that the Shi final was -*iəy*, and that the -*u* in -*jiəu* was a result of the vocalization of the final guttural. For comparative Sinitic reasons (九 *kiəu* = Tibetan *d-gu*) I objected to this (T. P. 1931) and maintained that *u* was the original principal vowel in this category. The parallelism 圈 \**giuk*: 有 \**giug* (as riming with types 得 \**tək*, 來 \**ləg* and 亟 \**kiək*, 子 \**tsiəg*) supports this.

That type 有 Anc. *jiəu*, Arch. \**giug*, 否 Anc. *pīəu*, Arch. \**pīug* is a direct correspondence to the »ju sheng« 圈 Anc. *jiuk*, Arch. \**giuk*, 服 Anc. Arch. *b'iuk* is confirmed by a highly interesting fact. In the »ju sheng« rime group (table II), the words in -*iu* all have guttural, labial or laryngal initials. There are none with dental or palatal initials. Now the -*iu* in tables III and IV, which I maintain are the -*g* correspondences to the -*iu* of table II, have exactly the same peculiarity: they have only guttural, laryngal or labial initials: 九 *kiəu*, 有 *jiəu* < *g-*, 牛 *ngiəu*, 否 *pīəu* etc.<sup>1)</sup> Whatever may be the reason for this (some phenomenon in Proto-Chinese, which we can reach only by Sinitic comparisons), the perfect parallelism between 圈 \**giuk*, 服 \**b'iuk* and 有 \**giug*, 否 \**pīug* is placed beyond all doubt by this fact.

There are, however, several complementary facts in support of the reconstruction of the rime \*-*iug* in the latter category (as against Simon's -*iəy*).

In the first place, there are some curious double readings of certain characters, which speak strongly in favour of this interpretation:

圈 Kuang yün *jiuk* and *jiəu*; 植 \**iu* and *jiəu*, 售 *p'iu* and *pīəu*; 服 *b'iuk* and *b'iəu*.<sup>2)</sup>

Wherever the final guttural has been lost, a kind of »Ersatzdehnung« of the

<sup>1)</sup> In my Analytic Dictionary I supposed that 尤 had an Arch. initial *z* because of the supposed »*ie* sheng« 就 *dz'iəu*. The table on p. 130 shows that I was wrong: 就 must be a »*uei* i« and 尤 also had a guttural initial. In my dictionary I furthermore considered 隹 *tswi* as phonetic in 售 *ziəu*. This, however, will not do. Shuo wen takes the upper part of 售 to be an abbreviated form of the *ziəu* »a pair of birds«, which occurs a. o. as upper part of 雙. This is certainly right, and our 售 is but a vulgar form of 雙.

<sup>2)</sup> The reading *b'iəu* for this last word is not given by the Kuang yün, but it is indicated by Cheng Chung (Si-nung), 1st cent. A. D., in his commentary on Chou li (K'ao kung ki, Kü jen). It should be observed that the reading *b'iəu* applies to a rare and special sense of the word, and cannot explain the rimes of table III, where the word is always read *b'iuk*.

syllable in the form of a parasitic *a* has been introduced: *b'ìug* > *b'ì'u*. With our interpretation, the double readings become quite reasonable: \**giuk* and \**giug*; \**ìuk* and \**giug*; \**p'ìuk* and \**p'ìug*; \**b'ìuk* and *b'ìug*.

There is, however, a still more potent reason why we must conclude that the *u* was original in the syllable. It is demanded by the »hie sheng« characters:

1. 適闊 2. 軌九 3. 正不 4. 滯有 5. 曙咎 6. 痞否 7. 灰又 8. 賄有 9. 犹尤  
10. 肮不 11. 陪吉 12. 煤某 13. 每母。

1. *kjwi*: *kìzu*; 2. *kjwi*: *kìzu*; 3. *p'jwi*: *pìzu*; 4. *jwi*: *jìzu*; 5. *kjwi*: *g'ìzu*; 6. *b'jwi*: *pìzu*; 7. *χuāi*: *jìzu*; 8. *χuāi*: *jìzu*; 9. *yuāi*: *jìzu*; 10. *p'uāi*: *pìzu*; 11. *b'uāi*: *p'ìzu*; 12. *muāi*: *mìzu*; 13. *muāi*: *mìzu*.

We can see here that Ts'ie yün -*ìzu* often goes together with Ts'ie yün -*i*, -*āi*, but only with such in »hie k'ou«, only with types *kjwi*, *χuāi*, never with types *kji*, *kāi*. If we apply our reconstructed Archaic values, the reason for this becomes clear:

1. *kiwəg*: *kìug*; 2. *kiwəg*: *kìug*; 3. *p'iwəg*: *pìug*; 4. *giwəg*: *giug*; 5. *kiwəg*: *g'ìug*; 6. *b'iwəg*: *pìug*; 7. *χwəg*: *giug*; 8. *χwəg*: *giug*; 9. *g'uəg*: *giug*; 10. *p'uəg*: *pìug*; 11. *b'uəg*: *p'ìug*; 12. *muəg*: *mìug*; 13. *muəg*: *mug*.

The Anc. -*ìug* words had Arch. \*-*ìug*, and this was not as a rule considered suitable to serve as phonetic in »k'ai k'ou« words like 基 \**kìəg*, 犀 \**g'ìəg*, 疑 \**ngiəg*, it could only serve in words that had a labial vowel, which satisfied the demand for phonetic similarity: \**giug* phonetic in \**χwəg* etc.

There is one more point to be observed in tables III and IV. Whereas the great majority of the rime words in these tables are the -*ək* (-*wək*), -*ìək* and -*ìuk*, in the »ju-sheng« category, and -*āi(-uāi)*, -*i(-wi)* and -*ìzu* in the corresponding »non-ju-sheng« category, yet there are two words with Ts'ie yün -*əu* without medial *i*: 母, 猶。 It stands to reason that these derive from Arch. \**mug* and hence rime with \*-*əg*, \*-*ìəg*, \**ìug*. To this there is a parallel in the corresponding -*ng* group: the word 夢, which has double readings *mung* and *miung*. The former corresponds to 母 \**mug*, the latter to 猶 \**miug*. This 夢 *mung*, then, was an original \**mung*, in contradistinction to 猶 Ts'ie yün *mung*, which was Arch. \**mong* (category of table VIII).

THE TS'IE YÜN FINALS *-a*, *-ia*, *-uo*, *-iwo*, *-iu* OF TABLES XIII—XV AND  
THEIR ARCHAIC VALUES.

When Simon (*op. cit.*) proposed an Arch. guttural final (»-γ») in all these categories, I showed, in my J. R. A. S. article, that his proofs were not sufficiently solid; the existence of such a final guttural was by no means proved. In my T'oung Pao article I adduced comparative Sinitic materials against such a guttural in a few of the word stems in question. But on the whole I have left the question open. While emphasizing the fact that no such guttural (be it *-g* or »-γ») has been proved so far, I have kept open the possibility that there has been such a final at least in certain word families in these rimes. I shall now take up the whole of this question and try to arrive at more positive and definitive results.

That there are a number of words in the said Ts'ie yün rimes which had guttural final in Arch. Chinese cannot be denied. They are clearly indicated by the »hie sheng», e. g. 怕 *p'a* < \**p'ak* (rather *p'vk*, cf. below, phonetic 白 *b'vk*), 赶 *p'i'u* < \**p'iuk* (phonetic 卜 *puk*), 裕 *iu'* < \**giuk* (phonetic 谷 *kuk*), 惡 *uo'* < \*-k' (second reading 'ak), 路 *luo'* < \*-k' (phonetic 各 *kák*) etc. But these are all cases of »falling ju sheng» (see p. 120 above) and form a category apart. The question is whether the bulk of words in these Ts'ie yün rimes, words both in p'ing, shang and k'ü sheng, like 家 *ka*, 下 *ya*, 馬 *ma*, 古 *kuo*, 處 *ts'iwo*, 級 *nuo*, 女 *niwo*, 居 *kiwo*, 拘 *kiu*, 取 *ts'iu* etc. had any final *-g* in Arch. Chinese.

Let us start with the *-iu* which stands in table XV. Was 拘 an Arch. *kiug*? Certainly not, we can easily see that. I will not adduce, as an argument, that a 拘 *kiug* would coincide with the 久 \**kiug* determined above (category of tables III, IV); it might be answered that my reconstruction \**kiug* there may be wrong. But there are definite proofs of another kind. We have seen that words with indubitable final *\*-g* often rime with words in *-k* (ju sheng) in the Shī king. 子 \**tsiəg* rimes with 德 \**tək* (table III); 修 *siəu* (< \*-g) rimes with 淑 *éiuk* (table XII); 沼 *tsiäu* (< \*-g) rimes with 蹤 *íak* (table XII). Our tables show a considerable number of such cases. Now, if the 拘 *kiu*, 取 *ts'iu* etc. had had a final *-g*: \**kiug*, \**ts'iug* etc., this would have been revealed by a fair number of rimes with »ju sheng» words, *kiuk*, *piuk*, *kiwok* etc. But that is practically never the case.<sup>1)</sup> Our table XV shows that our 拘 *kiu* etc. go together with certain

<sup>1)</sup> There are only two exceptional rimes of this kind (tables IX, 195 and XII, 407). Moreover, as pointed out already in my T'oung Pao article, cases like these are far less suggestive than those discussed above, where *lai*, *tsi* rimed with »ju sheng» words (table III). They have, in fact, very

words in -*qu* (to the origin of which we shall revert), which equally little rime with »ju sheng» words (only 2 exceptions: tables IX, 528, XV, 374). Hence these word categories had no final -*g*.

Far more complicated are the categories placed in our table XIII. In my J. R. A. S. article I concluded, from the rimes of XIII, that words like 家 *ka*, 下 *ya* etc. were Arch. \**kā*, \**g'ā* etc.<sup>1)</sup> Simon, on the contrary, takes them to be »*kay*», »*g'ay*», as riming with 故 *kuoy*» etc., and the final guttural, not the vowel, would then have caused the rimes.

I am convinced that this theory cannot be upheld. This follows in the first place from the fact that the Shī never rimes \*-āng: \**uong* (nor \*-āk: \*-uok, see p. 151 below); it could not very well, then, rime »-ay» and »-uoy». But there are even stronger objections, and the question has to be more seriously examined. We shall have to distinguish between 3 categories of words, when examining our tables XIII and XIV:

- a) Type 家 *ka* etc., i. e. all words with Ts'ie yün -*a*, -*wa*, *ia* in table XIII.
- β) Type 故 *kuo* etc., i. e. words with Ts'ie yün -*uo*, -*wo*, -*iu* with no final guttural revealed by the script.<sup>2)</sup> These are all the -*uo*, -*wo*, -*iu* in tables XIII and XIV except those indicated under γ.
- γ) Type 路 *luo'* < \*-*k'* etc., i. e. words with Ts'ie yün -*uo*, -*wo*, -*ia* which the script (»*hie sheng*») indicates as having had an Arch. final guttural (-*k'*, see p. 120 above). Those are:

little evidential value, since the final vowel was a velar -*u*. It is a well-known fact that *u* and *w*, and even a close *ö*, are genetically very much akin to *g*. Anc. Germ. *hoggan* has become Icelandic *hoggva*, Swedish *hugga*. To Germ. *ward*- the French substituted *guard*-.. Anc. Swed. *mōin* has become (*mōwin* >) *mogen*, *löe* (> *löwe* >) *loge*, *trōin* (> *trōwin* >) *trogen* (Noreen, Altschwed. Gramm. 1904 p. 213). Latin *uvula* (*ugula*) is Ital. *ugola*. At the end of a word a -*u* sometimes obtains a parasitic -*g*: Swedish *blud* (spelled *blod*) > dial. *blu* > *blug*. Anc. Icelandic *su* > Färöic *sugv* (as pointed out to me by Professor E. Lidén). Nothing would be more natural than that an Arch. Chinese *ku*, *kju* were sometimes (dialectally?) pronounced with a quality *ku<sup>w</sup>*, *ku<sup>wg</sup>*, a slight velar »Nachschlag«, which could explain rimes like the two cases just mentioned. No reconstruction of an original final guttural can be based on such cases.

<sup>1)</sup> There is another category of Ts'ie yün *ka* etc.: 加 *ka*, 麻 *ma*, 沙 *sa*, 差 *ts'a* which both in the »*hie sheng*» and in the Shī rimes go together with \*-ā, \*-ia (歌 \**kā*, 皮 \**b'ia*). None of these finals have any connection, in script or rimes, with »ju sheng» words, see J. R. A. S. 1928, p. 783. It is clear beyond doubt that they have never had any final consonant. These -*a*, -*ā*, -*ia* have no connection with our rimes in tables XIII and XIV. None of the latter, therefore, have had Arch. »-a» of any kind.

<sup>2)</sup> The case 滷 *yâk* »frozen hard» is a *huei i* (固 solid 木 water) and shows no final consonant for 固 or 古).

度路露懇懃惡莫據去祛庶夜射寫柘。

There are some fundamental facts that should serve as our point of departure.

- 1) Type  $\alpha$  家 rimes regularly with type  $\beta$  故;
- 2) Type  $\beta$  故 rimes frequently with type  $\gamma$  路;
- 3) Type  $\alpha$  家 does not rime with type  $\gamma$  路, with a single exception (XIV, 366).

Simon has not observed the third of these laws but only the first two, and has therefore been led astray. His argumentation is this: since type  $\gamma$  路 has had Arch. final guttural (as shown by the script), type  $\beta$  故, which rimes with it, must also have had it; and since type  $\beta$  故 may thus be concluded to have had Arch. final guttural, type  $\alpha$  家 which rimes with it, must also have had it. He therefore reconstructs — with an Arch. final fricative, an idea which I have criticized elsewhere — 家 *kay*, riming with 故 *kuoy*, and this *kuoy* riming with 路 *luoy*.

This is obviously impossible; for if 故 were *kuoy* and 路 were *luoy*, there would be no reason whatever why type  $\alpha$  家 should rime frequently with type  $\beta$  故 *kuoy*, but never with type  $\gamma$  路 *luoy*. The fact that  $\alpha$  家 and  $\gamma$  路 never meet directly, in the *Shi king*, but only indirectly, in as far as they both rime with  $\beta$  故, is a highly curious and important phenomenon. We must turn the matter round in the following way:

Type  $\alpha$  家 never, in the *Shi*, rimes with real »ju sheng« words (e. g. *-ák*, *-vk*, *-ák*, *-uok*, *-iok*, *-uk*, words with *-k* preserved up to our time in Southern China). It never rimes with type  $\gamma$  路, i. e. words that have had final *-k'*, lost before the time of the *Ts'ie yün*. But we have already seen that words which did really end in Arch. final guttural, e. g. 來 *\*ləg*, 子 *\*tsiəg* often rime with »ju sheng« words e. g. 德 *tək*, 服 *b'iuk*. We must therefore conclude — since *Shi king* is an extensive work with thousands of rimes, and since other ancient poems observe the same rules (see *Tuan Yü-ts'ai, op. cit.*) — that type  $\alpha$  家 had an open syllable and no final consonant, already in Arch. Chinese. If  $\alpha$  家 had been *kag* or *kəg*, it would have rimed with *kák*, *kiak* or *kák*, just as *\*ləg*, *\*tsiəg* etc. rime with *tək*, *b'iuk*.

On the other hand the final guttural in type  $\gamma$  路 is certain, as revealed by the »hie sheng« characters. The nature of the final was *-k*: 路 *luo'* < *\*-k'*, as shown on p. 120 above.

The really intricate question concerns type  $\beta$  故. Did it have a final guttural,

like type  $\gamma$  路, with which it often rimes? Or did it have no such final, like a 家, with which it also often rimes?

There are two facts that decide in favour of an open syllable, without guttural final:

1. Type  $\beta$  故, though it rimes with type  $\gamma$  路 *luo* < -k', never rimes with real »ju sheng« words in the Shī (words like 木 \*mok, 玉 \*ngiwok, 毒 \*d'uok, with -k preserved to up our day in the South). If 故 had been *kuog*, it would have rimed with these, just as \*ləg rimed with \*tək.

2. The category  $\beta$  contains a lot of the most common words in the language, and hence in the script: 故, 怒, 居, 語 etc. And yet these never (not even k'ü sheng words like 故, 怒, 處, 顧!) serve as phonetics<sup>1</sup>) in »hie sheng« characters for »ju sheng« words (types \*kok, \*kuok, \*kiuwok) which could never have been entirely avoided, had they had a final guttural: 故 \*kuog etc.

We have therefore perforce to conclude that type  $\beta$  故 had no Arch. final guttural. Comparative Sinitic materials for words like 吾, 五 confirm this (see my T'oung Pao article). The rimes of type  $\beta$ :  $\gamma$  have therefore to be explained in the following fashion:

故 *kuo*: 路 \*glo<sub>k</sub>: 祕 *k'iō<sub>k</sub>*:

居 *kiwo*: 夜 \*zio<sub>k</sub>, etc.<sup>2</sup>)

It is an imperfect rime, allowable thanks to the fact that the final -k, owing to the falling tone, was weakened in a particular way, which was not the case with the *recto tono* »ju sheng« words like 木 \*mok, 玉 \*ngiwok. I have already proposed this explanation in my J. R. A. S. article, and our investigation here emphasizes that it is the only solution possible.

This theory of a particular kind of -k in »falling ju sheng« is not an assumption made at random. It can be supported by an interesting fact.

If we examine our Shī rime tables below, we recognize that words of the type  $\gamma$  路 \*glo<sub>k</sub> rime quite often with words having open syllable: 故 *kuo* etc. But, contrary to every expectation, they do not rime with *recto tono* »ju sheng« words of the type 木 \*mok, 玉 \*ngiwok, 毒 \*d'uok.

<sup>1)</sup> The case 滷 has already been explained as a shuei i on p. 132 above. There is also 博 which seems to be phonetic in 博 *pâk* and 總 *b'iwak*. But nothing can be based on this. Shuo wen quite reasonably explains 博 as a shuei i (博 = 布 »to spread out«), and then 博 is contracted phonetic in 總, just as 宰 is contracted phonetic in 桎 (there are many such cases).

<sup>2)</sup> To the vocalism in these words we shall revert presently; the \*k'iō<sub>k</sub> derives from an original *k'jop* through dissimilation.

It would seem natural to conclude, that the Shī king rimes represent a later stage than the »shie sheng« characters (which latter prove the existence of the final guttural: 各: 路 etc.) and that the final *-k* had already had time to drop out before the Shī epoch. Then a rime like 故 *kuo*: 路 \**glo*' (< \**glok*') would be perfectly natural. But such a theory is not admissible. We shall see below that the final *-k'* was preserved as late as in middle Han time, so it must certainly have been there also in Shī time. Moreover, such a theory (路 \**gluo*' or \**glo*' already in Shī time) could never explain why category  $\alpha$  家 \**ka* frequently rimes with cat.  $\beta$  故 *kuo* but never with cat.  $\gamma$  路. It should rime just as frequently with both, if both had final *-o* (open syllable) in Shī time. This, therefore, is out of the question.<sup>1)</sup>

The reason for the absence of 路: 木  $-o_k$ :  $-ok$ ' rimes is quite different. The final *-k* in  $-o_k$  etc. was neither lost nor tending to become lost — in the sense of a fluctuation 路 \**glok* ↔ \**glo* — in Shī king time, since it continued to survive for centuries. We have to imagine the phonetic realities somewhat differently.

If we study the modern dialects, we find that the »ju sheng« *-k* in words like 木, which has been lost since Yüan times in Northern China, still survives in Canton: *mok*. But it is important to observe that there it is always an »implosive« *-k*, a »half-mute« *-k* which we might denote here by *mo<sub>k</sub>*. We can draw the inference that, when a *-k* disappears in Chinese, the process is not this:

*mok* > *mok* ↔ *mo* > *mo*

but this:

*mok* > *mo<sub>k</sub>* > *mo*.

The middle stage may continue for a long time. That »ju sheng« *-k* was »implosive« (at least in some dialects) already in T'ang time, a thousand years ago, is made probable by the Sino-Annamite loan words, which have equally »implosive« *-k*. I now propose the law that the »falling ju sheng« words (type  $\gamma$  路) had already in Chou time — thanks to their falling inflexion — got their final *-k* made implosive (halfmute): \**glo<sub>k</sub>*'. In other words: exactly the same evolution as that which has taken place in more recent times in words of type 木 in Cantonese (*mo<sub>k</sub>*) had been undergone, at a much earlier stage, by words of type 路 \**glok*' (falling tone).

Why, then, should this implosive \**glo<sub>k</sub>* rime with  $\beta$  故 (table XIV) rather than with type 道 \**d'uok* (table IX)? The reason is simple. An implosive *-k*, such

<sup>1)</sup> Li Fang-kuei has tried this solution, without, however, observing the said obstacle.

as it is spoken in Canton, when ending a sentence or a phrase (i. e. when it is followed by a pause), is really but little audible: in a word like *mo<sub>k</sub>* before a pause, it is, phonetically analysed, mainly the off-glide from the preceding vowel which makes you hear that the tongue takes the *k* (*g*) position; the occlusion is solved quietly, without appreciable explosion. It is only when the *mo<sub>k</sub>* is followed immediately (without pause) by another syllable that the final *-k* becomes clearly audible. Now, the Shī king rime words nearly always occur at the end of a line, i. e. the 路 *\*glo<sub>k</sub>* etc. were regularly followed by a pause, which made the implosive *k* but little audible. It is therefore natural that it rimes rather with type 故 *kuo* than with type 毒 *\*d'uok*; that rime will do sufficiently well acoustically.

On the other hand, the rime *kuo*: *\*glo<sub>k</sub>* cannot have been felt to be a perfectly exact and good rime. Hence, *\*glo<sub>k</sub>* (type  $\gamma$ ) could do as a makeshift rime to *kuo* (type  $\beta$ ) but not very well as a rime to the phonetically more distant syllable type *a* 家 *\*kā*, with an open *ā* vowel, and that is the reason why there are no rimes of the type *a: $\gamma$* . Rimes *a: $\beta$*  *\*kā*: *kuo* might do, and  *$\beta$ : $\gamma$*  *kuo*: *\*glo<sub>k</sub>* might do, but not *a: $\gamma$*  *\*kā*: *\*glo<sub>k</sub>*.

In my discussion above I have operated with the forms 路 *\*glo<sub>k</sub>* and 夜 *\*zio<sub>k</sub>*, and this necessitates a long digression about the archaic vocalism in category  $\gamma$ .

As a point of departure we take the rimes in table X, words with Ts'ie yün -āng (long vowel): *iang* (long): *vng* (short). These rimes are very numerous, and I have made only a few extracts (for the rest see Tuan Yü-ts'ai, *op. cit.*). These rimes are kept strictly apart from those in table VIII (Ts'ie yün -ung, -ong, -āng); the words of these two tables never meet each other as rimes. Now, if we go to the »hie sheng» characters we find exactly the same distinction: words with Ts'ie yün -āng, -iang, -vng are not phonetics in words with Ts'ie yün -ung, -ong, -āng or vice versa. We can draw the safe conclusion that in Archaic just as well as in Ancient Chinese the former group had some kind of *a* as principal vowel, whereas the latter had some kind of *o*. Indeed, we have every reason to assume -āng: -iang: -vng in table X for the Shī language just as well as for the Ts'ie yün.

If we now go to the corresponding »ju sheng» words with Ts'ie yün -k, we find that there are two strictly different groups of Ts'ie yün -āk:

1. Type 樂 *lák*, which rimes with Ts'ie yün -iak and with various words ending in -au, -au, -iäu, -äk, -uok etc. (see table XII).

2. Type 各 *kák*, which rimes with Ts'ie yün -iäk and -vk (table XI) (and with two cases of -uo').

The most important point to observe is that the first type 樂 has rime connections with words ending in Ts'ie yün -äk, -uok. From the analogy of categories -äng, -iang, -vng as strictly separated from -ung, -ong, -äng in the rimes, we can conclude that category 樂 Ts'ie yün *lák* was not Arch. \*lák but something with an »vocalism. Type 各 *kák* on the contrary has never anything to do with »ju sheng» words of the types -äk, -uok. And since this type 各 *kák* frequently rimes with -iäk (< \*-iak) and -vk, just as -äng so often rimes with -iang, -vng, we necessarily conclude that in 各 *kák*: 夕 *ziäk*: 伯 *pvk* we have the real parallel to -äng: -iang: -vng and that 各: 夕: 伯 were Arch. \*-äk: \*-iak: \*-vk, just as 唐: 贞: 行 were undoubtedly Arch. \*-äng: \*-iang: \*-vng.<sup>1)</sup>

But then we are faced with some curious phenomena both in the script and in the Shī rimes.

It is perfectly true, as I said just now, that the words of type 各 *kák* never

<sup>1)</sup> There is one difficulty. If, as assumed here, 夕 Ts'ie yün *ziäk* was an Arch. \*dzjak, why has 若, which belongs to this category and must have been Arch. \*níjak, become not Ts'ie yün *níziäk* but *níziak*? I think it must reasonably be due to the influence of the different initials.

The character 若, besides, raised quite a problem of its own. I have said that words of types 家 \*kä, 故 *kuo*, 夫 *piu* do not rime with »ju sheng» words. But we find an exception in this character *níziak*. In Yi king, hexagr. *Sun*, we find rime 下: 若. Exactly the same rime 若: 下 appears in the ritual song in Ts'ien Han shu k. 22, p. 10 a. And Shī king has (p. 542) the rime 若: 賦. This would seem to break the rule just mentioned. But the secret of these rimes is that besides the reading *níziak* (< \*níjak) the character 若 has a reading 'nízia (< \*níja) which is attested in the Kuang yün and which explains the numerous Buddhist transcriptions in which 若 stands for *na* e. g. 般若 = *prajña* etc. (It is this reading 'nízia that is phonetic in 慈 'nízia 'to excite', and this word should therefore have no Arch. final guttural such as I proposed in my Analytic Dictionary). It is true that Kuang yün gives only the senses »dried herbs«, and »a family name« for this reading 'nízia of 若, but the rimes quoted demand it also (alternatively) in the ordinary »kia tsie« sense of the character. Since 汝 *níziwo* had no Arch. final guttural (category 故 above), it seems very reasonable to suppose that when 若 is used, in Arch. literature, as a »kia tsie« for 汝, it should be read not as Ts'ie yün *níziak* (\*níjak) but *nízia* (\*níja); as a »kia tsie« for 汝 a \*níja is quite plausible. Arch. 若 \*níjak and \*níja »like, such as« (the latter a word cognate with 如) are probably two independent words which, being synonymous, are brought under the same character.

mix with *-uk*, *-ok*, *-ák* in the phonetic series or in the rimes. But they frequently mix with *-uo'* both in »hie sheng» compounds and in double readings of certain characters:

1. 各路 2. 聚叢 3. 蓋護 4. 斥訴 5. 昨昨 6. 錯 7. 惡 8. 莫 9. 說 10. 度。

1. *kák*: *luo'*; 2. *t'ák*: *two'*; 3. *ywák*: *yo'*; 4. *ts'íak*: *suo'*; 5. *dz'ák*: *dz'uo'*; 6. *ts'ák* and *ts'uo'*; 7. *·ák* and *·uo'*; 8. *mák* and *muo'*; 9. *mák* and *muo'*; 10. *d'ák* and *d'uo'*.

Moreover there are two (three?) such contacts between *Ts'ie yün* *-ák* and *-uo'* in the *Shí* rimes (XI, 262, 313, 343?).

In all these *-uo'*, we conclude, of course, a final *-k* lost through the falling tone. But what about the vocalism? If *-ák* could not mix with *-uok* (real »ju sheng») in the »hie sheng» and rimes, how could it mix with *-uok'*? Moreover, would it be natural to suppose that one and the same word stem had two phases: 度 *d'ák* and *d'uo'*, 惡 *·ák* and *·uo'*, which differed from each other in *two* respects, both in regard to the vowel and to the tone? Not very likely. We have to conclude that Arch. Chinese had the *same* vocalism in 各 *kák* and 路 *luo'*, in 度 *d'ák* and 度 *d'uo'*, in 惡 *·ák* and 惡 *·uo'*. Either 各 *kák* etc. had Arch. *o*, or 路 *luo'* etc. had Arch. *á*. The former is impossible, for then 各 etc. would go together, in rimes and »hie sheng», with words in *Ts'ie yün* *-uk*, *-ok*, *-ák* (table IX) which they never do. It is therefore 路 *luo'*: 度 *d'uo'* and 惡 *·uo'* which had Arch. *á*. Again, then, we have to ask: was this 度, *Ts'ie yün* *d'uo'*, Arch. *d'wák'* or *d'ák'*? *d'wák'* is unlikely for the reason just mentioned: why should the stem variation consist both in a vowel difference and in a tone difference? The natural solution is to assume a *d'ák'*:

Arch. Chin.	Arch. Chin.
度 <i>d'ák'</i> »to measure»	<i>d'ák'</i> »a measure»
↓	↓
Ts'ie yün	Ts'ie yün
<i>d'ák</i>	<i>d'uo'</i>

Indeed, Li Fang-kuei has already suggested an Arch. »a» vocalism in 度 *d'uo'*, and he is undoubtedly right, though our conceptions of the evolution are somewhat different from his (*op. cit.* p. 12).

We thus have to conclude that the language which is the basis of the »hie sheng» characters had the following values:

1. 各路 2. 豪轟 3. 蔽護 4. 斥訴 5. 昨昨 6. 錯 7. 惡 8. 蔽 9. 護 10. 度。

1. \*klâk<sup>-</sup>: \*glâk<sup>'</sup>; 2. t'âk<sup>-</sup>: tâk<sup>'</sup>; 3. g'wâk<sup>-</sup>: g'wâk<sup>'</sup>; 4. t'ïak<sup>-</sup>: sâk<sup>'</sup>; 5. dz'âk<sup>-</sup>: dz'âk<sup>'</sup>; 6. ts'âk<sup>-</sup> and ts'âk<sup>'</sup>; 7. 'âk<sup>-</sup> and 'âk<sup>'</sup>; 8. mâk<sup>-</sup> and mâk<sup>'</sup>; 9. mâk<sup>-</sup> and mâk<sup>'</sup>; 10. d'âk<sup>-</sup> and d'âk<sup>'</sup>.

So far so good. But if this theory satisfactorily explains the »hie sheng» characters it fits in badly with the Shî rimes. For we see from table XIV that words of the type 路 *luo'* (< \*glâk<sup>'</sup>) often rime, *not* with words ending in -âk<sup>'</sup>, -iâk<sup>'</sup>, -vk<sup>'</sup>, as might be expected (there are only two certain cases thereof: the XI, 262, 313 already mentioned), but with words ending in -uo, -iwo. We are here, indeed, brought back to our rime category  $\beta:\gamma$  故路 of p. 132 above, and if we accept a final -âk<sup>'</sup> for type 路 in Chou time, we seem to be at a loss to explain these  $\beta:\gamma$  rimes.

And this brings us to yet another problem. There is the common rime word 夜 *ia'*. It has 亦 *iâk* (< \*ziak) for phonetic, and it is itself phonetic in 腋 *iâk* (< \*ziak). There cannot be the slightest doubt that the »hie sheng» inventors pronounced it with an *a*: \*ziak. And yet in Shî it regularly rimes with -uo, -iwo (table XIV). The case is just the same with 射 *dzi'a'* and 築 *sia'*.

In all these cases of types 路 *luo'* and 夜 *ia'*, i. e. category  $\gamma$  above, there are two main facts which cannot be gainsaid:

a) On the one hand they have clearly had 路 -âk<sup>'</sup>, 夜 -iak<sup>'</sup> in the »hie sheng» characters. We can even extend our conclusion here. To the triad 唐: 良: 行 \*-âng: \*-iang: \*-vng and to the triad 各: 夕: 伯 \*-âk<sup>'</sup>: \*-iak<sup>'</sup>: \*-vk<sup>'</sup> there should correspond, in »falling ju sheng», some \*-âk<sup>'</sup>: \*-iak<sup>'</sup>: \*-vk<sup>'</sup>. The \*-âk<sup>'</sup> and \*-iak<sup>'</sup> are 路 and 夜; where is \*-vk<sup>'</sup>? Evidently we have it in words like 乍 *dzi'a'* (< \*dz'vk<sup>'</sup>), 怕 *p'a'* (< p'vk<sup>'</sup>), which explains why 乍 is phonetic in 窮 *dz'vk*, and why 怕 has the phon. 白 *b'vk*.

b) On the other hand they have evidently had 路 -o<sub>k</sub><sup>'</sup>, 夜 iø<sub>k</sub><sup>'</sup> in the Shî king, since they regularly rime with -uo, -iwo.

We have consequently to establish an evolutional scheme, in which the »falling ju sheng», with its implosive -k, influences the principal vowel in a special way:

	Even ju sheng:			Falling ju sheng:		
Hie sheng	各 <i>klâk<sup>-</sup></i>	夕 <i>dziak<sup>-</sup></i>	伯 <i>pvk<sup>'</sup></i>	路 <i>glâk<sup>'</sup></i>	夜 <i>ziak<sup>'</sup></i>	怕 <i>p'vk<sup>'</sup></i>
Shî king	<i>klâk<sup>-</sup></i>	<i>dziak<sup>-</sup></i>	<i>pvk<sup>'</sup></i>	<i>glo<sub>k</sub><sup>'</sup></i>	<i>zio<sub>k</sub><sup>'</sup></i>	<i>p'o<sub>k</sub><sup>'</sup></i>
Ts'ie yün	<i>kâk</i>	<i>ziâk</i>	<i>pvk</i>	<i>luo'</i>	<i>ia'</i>	<i>p'a'</i>

Does this imply that the Shî language was younger than the »hie sheng» lan-

guage, a further developed form of the latter? I do not think so. The »hie sheng« characters are indeed quite rare on the An-yang oracle bones, and the great majority of them must have been created in Chou time. They are therefore practically contemporaneous with the Shī king. I conclude that parallel with the Shī dialect there were considerable dialects which had the »a« vocalism in words like 路 \*glāk', 夜 \*ziak', 怕 \*p'vk' intact, which is discernible also in some isolated Shī rimes (XI, 262, 313). That this was so is proved moreover by the later language. We have seen that the Shī rimes demand -io<sub>k</sub>' in type 夜<sup>1</sup>; but the original a (-iak') is still living in the Ts'ie yün language: 夜 ia'. We therefore have to imagine the evolution thus: if we call the Shī dialect S, the dialect that forms the basis of the »hie sheng« characters H, we can establish the following table:

Primary:	Chou:	Ts'ie yün:
路 glāk'	{ H. glāk' S. glo <sub>k</sub> '	luo'
護 g'wāk'	{ H. g'wāk' S. g'wo <sub>k</sub> '	ruo'
夜 ziak'	{ H. ziak' S. zio <sub>k</sub> '	ia'
庶 siwak'	{ H. siwak' S. siwo <sub>k</sub> '	siwo'
怕 p'vk'	{ H. p'vk' S. p'o <sub>k</sub> '	p'a'

In other words, the Ts'ie yün language derives from an Arch. dialect that has suffered the evolution *āk'* > *o<sub>k</sub>'*, *īwak'* > *īwo<sub>k</sub>'*, but not the evolution *vk'* > *o<sub>k</sub>'*, *īak'* > *īo<sub>k</sub>'* of the Shī king language.

In the preceding discussion I have operated with type  $\beta$  故 *kuo* and 居 *kiwo* etc. as if the sound values of these syllables, once the absence of an Arch. final guttural was proved, were absolutely clear for the rest: -uo, -iwo. But that was for practical reasons only, it being necessary to discuss one problem at a time. We now have to take up the vocalism of type  $\beta$  for a closer scrutiny.

In my Phonologie, without much discussion, I treated the Ts'ie yün rimes 模 and 魚 as »ho k'ou« rimes: *kuo*, *kiwo*. It is necessary to revert to this question. The correctness of the medial *u*, *w* in *kuo*, *kiwo* may be challenged. Indeed, H.

<sup>1)</sup> It could not be -iak', since 夜 never rimes with type 家 *kā* but only with type 故 *kuo*.

Maspero (»Le dialecte de Tch'ang-ngan sous les T'ang«) takes these Ts'ie yün rimes as »k'ai k'ou« categories (*ko*, *kio*). The modern dialects can give us no clue in the matter, nor Sino-Korean or Sino-Annamite, which show strong deviations in these rimes: 居 Kor. *ko*, Ann. *kъ*. The question is therefore difficult and should be reconsidered.

Let us start with Ts'ie yün rime 魚. The only ancient dialects that have the original *-o* in this rime preserved, Kan-on and Go-on, do not seem to favour the idea of medial *u*, *w*: Kan-on 魚 *gio*, 居 *kio*, 女 *dio*, 書 *sio*, 徐 *sio*; Go-on, same words: *go*, *ko*, *nio*, *so*, *zo*. It would appear therefore as if my reconstruction: Ts'ie yün *ngiwo*, *kiwo* etc. were wrong and that Maspero's were preferable: *ngio*, *kio* etc. Yet I am positive that this is not so.

In the first place the negative evidence of Sino-Japanese is void of value. It is a well-known fact that the Japanese borrowers simplified the syllables violently, and often left out the medial *i* and the medial *w*, often both at the same time, e. g. 宣 *siwān* > Jap. *sen*. A *kiwo* therefore should regularly give Japanese *kio* or *ko*; it is according to rule that the *w* shall be skipped.

Then for the positive points. The fundamental fact to be kept in mind is that the two rimes 模 and 魚 have to be kept together as complementary rimes. Type 居 is the yodicized correspondence to the yod-less 故. That this is so is seen from the extremely intimate connections between the two rimes in the »hie sheng« characters: there is 吾 *nguo* phonetic in 語 *ngiwo*, 古 *kuo* phonetic in 居 *kiwo*, 墾 *luo* phonetic in 驅 *liwo*, 都 *tuo* with same phonetic as 諧 *tsiwo*, 途 *d'uo* with phon. 余 *(d)iwo* etc. That 古 in the Ts'ie yün language should have been »ho k'ou« *kuo*, whereas 居 was »k'ai k'ou« *kio*, or vice versa, that 古 should have been »k'ai k'ou« *ko* and 居 »ho k'ou« *kiwo* is entirely out of the question. This much is certain: the two finals form a system together. Either 古 was *kuo* and 居 was *kiwo*; or 古 was *ko* and 居 was *kio*. *Tertium non datur*.

Now, if Sino-Japanese does not reveal the »ho k'ou« element in rime 魚, it does so very clearly in rime 模. It is true, here again, that 古 is rendered by *ko*, 墾 by *ro* etc.; but this, again, is according to the ordinary simplification rules. But when the syllable has no initial consonant the »ho k'ou« *u* (*w*) should appear, if it existed at all. Ancient Japanese very carefully distinguished between *o*- and *wo*- at the beginning of words. And now, if we go to the common and numerous words of rime 模 lacking initial consonant: 烏, 桃, 汗, etc., they all are spelled *wo*, not *o*, in

Kan-on, the ancient dialect closest to the Ts'ie yün dialect. These words were consequently pronounced *·uo*, not *·o*, in Ts'ie yün. I draw the necessary and important conclusion that the whole rime 模, words like 古, 嘘, 都, 途, had *-uo*, not *-o*, in the Ts'ie yün: *kuo*, *luo*, *tuo*, *d'uo*, since they go together with 烏 etc. in the »fan-ts'ie« spellings and form a common rime. From what I have just said of rime 魚 being the yodicized correspondence to rime 模, its complementary rime, it follows that since 模 was *-uo* (古 *kuo*), 魚 was *-iwo* (居 *kiwo*).

Although I am perfectly convinced, for these reasons, that my reconstruction of *-uo*, *-iwo* for the Ts'ie yün language is safe and reliable, this does not mean that I consider these same values as self-evident also for Archaic Chinese; on the contrary, there are great chances that a *kuo* goes back to a *\*ko*, and *kiwo* to a *\*kio*. It must be remembered that a »breaking« of *-o* into *-uo* is phonetically quite natural (cf. Lat. *novum* > *nuovo*). We must therefore necessarily put the question: was 古 original *\*kuo* or was it *\*ko*?

To begin with, we shall call to mind the highly interesting group which we have just studied (type  $\gamma$ ). In that group, in which the syllable in Archaic Chinese ended in *-k*, we find examples of *both* kinds: on the one hand an original »ho k'ou«: 讀 *\*\*g'wák'* > *\*g'wo<sub>k</sub>'* > *γuo'*; on the other hand a secondary »ho k'ou« produced by the »breaking« of an earlier *-o*: 惡 *\*\*.ák'* > *\*.o<sub>k</sub>'* > *·o'* > *·uo'* (observe that in this word, which almost certainly had no original »ho k'ou«, the Kan-on, quite clearly, indicates the Ts'ie yün »ho k'ou«: Kan-on *wo*).

If in this Ts'ie yün *-uo* of category  $\gamma$ , wherein the *-o* was not originally the end of the syllable, we have cases of both primary »ho k'ou« and primary »k'ai k'ou«, how was it in the type  $\beta$ , where the *-o* did originally form the end of the syllable? I believe the case was quite analogous: the Ts'ie yün type *kuo* derives from both type *\*ko* and type *\*kwo*. In other words, Arch. *\*ko* and *\*kwo* have coalesced in Ts'ie yün *kuo*.

The great majority of the 故 *kuo* type characters I would put down as originally »k'ai k'ou« *\*ko* etc. The »hie sheng« characters point in that direction.

If we go through the various phonetic series of the script, we shall find that »k'ai k'ou« and »ho k'ou« words do not easily mix. A *ká* is not phonetic in a *kuán*, nor a *kán* in a *kuán*, nor a *kjwi* in a *kji* etc. This rule is not absolute, far from it; there is a considerable number of exceptions. But on the whole the tendency is quite marked. The principal exceptions are to be found in rimes 鍾 and 東: *-iwong* (ho k'ou) and *-ung*, *-iung* (i. e. k'ai k'ou *\*-ong*, *\*-iong* see above)

do not seldom mix in the »hie sheng». Here, however, besides the labial vowel, the final *-ng* on both sides helps to make the syllables similar, and to allow of »hie sheng» contacts. But there is no such additional similarity in open syllables. This was the principal reason why I stated just now that 古 cannot originally (and hence not in Ts'ie yün either) have been »ho k'ou» *kuo*, and 居 at the same time »k'ai k'ou» *kio*, or vice versa; either both were »ho k'ou» *kuo*, *kiwo*, or both »k'ai k'ou» *ko*, *kio*.

We can now extend this argumentation to a new group of characters. Both types: 古 Ts'ie yün *kuo* and 居 Ts'ie yün *kiwo*, have frequent connections, in the »hie sheng», with category a 家 \*kā, which had undoubtedly »k'ai k'ou». There is 五 *nguo* phonetic in 衍 \*ngā; 賈 *kuo* phonetic in 價 \*kā; 爻 *nuo* phonetic in 爻 \*nā; 土 *t'uo* phonetic in 社 \*d'iā (cognate words); 茶 *d'uo* also read \*d'a; 屠 *d'uo* with phonetic 者 \*t'iā; 祖 *tsuo* with the same phonetic as 姐 \*tsiā; 予 *iwo* phonetic in 野 \*d'iā; 余 *iwo* phonetic in 斜 \*dziā; 車 *read kiwo* and \*ts'iā; 如 *niziwo* phonetic in 爪 \*nā; 諸 *tsiwo* with phonetic 者 \*t'iā; 助 *d'iwo* with same phonetic as 姐 \*tsiā etc. In all these *-uo*, *-iwo* there is a probability, on the verge of certainty, that the Ts'ie yün vocalism is a result of »breaking» and derives from an Arch. *-o*, *-io*: 五 \*ngō phonetic in 衍 \*ngā etc.

This would furthermore very well suit the personal pronouns. I have earlier discussed the scheme:

我 <i>ngā</i>	爾 <i>nāiē</i> (< *nīa)
吾 <i>nguo</i>	汝 <i>nāiwo</i> (< *nīwo).

This would now become even simpler:

我 <i>ngā</i>	爾 <i>nā</i>
吾 <i>ngō</i>	汝 <i>nīo</i>

Also the correspondences: Chinese 五 \*ngō: Tibetan *l-nga*; Chin. 魚 \*ngiō: Tib. *na* will be more satisfactory than *nguo*: *l-nga*, *ngiwo*: *na*.<sup>1)</sup>

On the other hand, while the majority of Ts'ie yün *-uo* thus derive from Arch. *-o*, there are nonetheless certain cases in which we have every reason to suppose an original »ho k'ou». There are for instance 孤 *kuo* and 狐 *yuo*, which have a »ho k'ou» word for phonetic: 爐 *kwa*. Similarly 穩 *k'uo* has the same phonetic as 謂 *k'wa*. Here we are certainly not authorized to reconstruct 孤 \*ko, 穩

<sup>1)</sup> If Chin. 女 \*nīo = Tib. *na*, in the way Simon proposes, a final *-g* in Chinese must have been lost before the Shi and »hie sheng» Chinese, unless the *-g* is a special Tibetan suffix in this word.

\**k'o*; we must reckon with an original »*ho k'ou*«: 孤 \**kwo*, 僮 \**k'wo*. Such cases are, however, quite rare.

It must be emphasized that the »*hie sheng*« criterion of Arch. \**k'ai k'ou* or »*ho k'ou*« is by no means binding. It is more suggestive than positive. When we generalize from the considerable number of cases in which it seems to indicate \**k'ai k'ou*, and carry this through: \**ko*, \**t'o*, \**lo* etc. as corresponding to *Ts'ie yün kuo*, *t'uo*, *luo* etc., with the exception of only a few cases like the 孤, 僮, we are in fact somewhat bold; but I am confident that we cannot on the whole be wrong; the possible mistakes (where there should be Arch. \*-*wo* instead of our \*-*o*), must be very few indeed.

I have shown here that *Ts'ie yün -uo* is a rime that comprehends both Arch. \*-*o* (type 五 \**ngo*) and \**wo* (type 孤 \**kwo*), which have coalesced in their evolution. I have also shown that *Ts'ie yün -iwo* was Arch. *k'ai k'ou* \**io*. But I have *not* drawn the parallel and said that *Ts'ie yün -iwo* comprehends both Arch. \*-*io* and \*-*iwo*, for in my opinion it does not.<sup>1)</sup> There existed, it is true, in Arch. Chinese both finals: \*-*io* and \*-*iwo*, as well as \*-*o* and \*-*wo*, but the \*-*iwo* is not concealed in *Ts'ie yün -iwo* but elsewhere. And this is a highly interesting chapter.

In order to study this, we have to revert once more to the rimes of the type 下 *ya*: 舞 *miu*, 馬 *ma*: 武 *miu* etc. (table XIII). In my J. R. A. S. article I have shown that 下 *ya* was an Arch. \**g'a*, 馬 was \**ma*<sup>2)</sup>. I imagined, at the time, that rimes like *ma*: *miu* were imperfect rimes, allowable by a considerable measure of *licentia poetica*. Such poetic licence was common at the end of the Chou era, e.g. in *Lao-tsī* and *Chuang-tsī* (see my article »The poetical parts in *Lao-tsī*«), and in Han time (see *Yi-lin* below).

But a closer investigation of the *Shī* shows nevertheless that *here*, in the

<sup>1)</sup> We must not reckon here secondary cases like 庶 *siwo*. This certainly had original *ho k'ou*, but it had from the beginning a final -*k*, as I have shown above: *siwak* > *siwok* > *siwo*. That this word had really primary *ho k'ou* and was not developed thus: *siak* > *Shi siok* > Han *siio* > *Ts'ie yün siwo* is certain. If it had been original *siak*, it would have followed the pattern of 射 *d'jak* > *Hie sheng* language *d'jak* > *Ts'ie yün džia*.

<sup>2)</sup> I was then merely following up an idea of H. Maspero's, though I had to work it out somewhat differently from his construction. That 家 *ka* was *kä* as late as in the 1st c. A. D. is shown by the fact that the famous lady Pan Chao, when married to Mr. Ts'ao, was called 曹大家 *d'ai-ka* which was equal to 大姑 *d'ai-kuo*. That 家 could serve as *chia tsie* for 姑 *kuo* proves that it was still pronounced with a labial vowel. It was later that it developed thus: *kä* > *kač* > *k'a* > *ka*.

Shī rimes, we are by no means forced to reckon with a *licentia poetica*. On the contrary, the said rimes are quite correct. This is easily gathered from our tables XIII and XV. The words with Ts'ie yün -iu are clearly divided into two distinct groups. One of them contains words with guttural, laryngal and labial initials 虞 *ngiu*, 于 *jiu*, 夫 *piu*, 武 *miu*, but no palatal or dental group. The other has gutturals and labials 聽 *kiu*, 附 *b'iu*, and, besides those, various palatals and dentals, e. g. 主 *tsiu* 取 *ts'iu*. The two groups are kept strictly apart in the rimes (tables XIII and XV), and both cannot have had Arch. -iu. The former category goes together, in the rimes, with -a, -o; the latter with -əu. This can be no mere chance. If rimes like 馬 *ma*: 武 *miu* were really Arch. \*ma: \*miu and were due to a poetic licence which allowed of a: u as rimes, there would be no reason whatever why 家 *\*ka*, 下 *\*g'a*, 馬 *\*ma* should not rime with 聽 *kiu*, 主 *tsiu* 取 *ts'iu* just as well as with 羽 *jiu*, 夫 *piu*, 武 *miu*. But they never do. We must therefore conclude that the -iu words riming with -əu (table XV) had original -u, but that -iu words riming with -a, -uo, -iwo had original -o as principal vowel.

A highly interesting confirmation of this is furnished by the rime XIII, 37, where as rime to *ka*, *pa* (\*ka, \*pa) the Mao version has 虞 *ngiu*, but another version has 吾 *nguo* (in the compound word »tsou-yü«). This is all the more interesting since the *ngiu* has 吳 *nguo* as phonetic.

If category 虞, 夫 has thus necessarily had Arch. \*-o, it cannot, on the other hand, have had the same Arch. final \*-io as the 魚 \*ngio, 居 \*kio etc. studied above, for then 虞 should have given Ts'ie yün *ngiwo*, not *ngiu*. And here we are back — quite naturally and organically — at our system of p. 142 above. We there saw that Arch. Chinese possessed both 古 \*ko and 孤 \*kwo and that these coalesced in the Ts'ie yün rime 模: 古 *kuo*, 孤 *kuo*. Now we can state here that Arch. Chinese had both 魚 \*ngio and 虞 \*ngiwo, but they did not coalesce in their evolution. 魚 \*ngio was »broken» into *ngiwo*, just as -o was broken into -uo. But at the time this took place the original \*ngiwo (虞) had already (perhaps long ago) passed on to *ngiu*, thanks to the influence of the *w*.<sup>1)</sup>

<sup>1)</sup> That 虞 \*ngiwo > *ngiu* whereas 孤 \*kwo > *kuo* is no obstacle. The evolution is very often quite different in yodized syllables and in yod-less syllables, see my »Etudes sur la Phonologie Chinoise«, *passim*. Let us add that the fact that 廟 *siwo* (< *siwok* < *siwak*) in spite of its original *sho k'ou*, has not shared the fate of 虞 \*ngiwo > *ngiu* and become Ts'ie yün *siu*, is no obstacle either. For \*ngiwo > *ngiu* may have taken place at a time (Han time?) when 廟 *siwok* still had its final -k preserved.

Let us sum up in a scheme the fate of the syllable types  $\alpha$  and  $\beta$ , with addition of the original -u syllables (for the original vocalism in the syllable  $k\zeta u$ , see below):

	$\alpha$			$\beta$					
	家	瓜	野	古	居	孤	虞	狗	駒
Arch.	<i>kā</i>	<i>kwā</i>	<i>d\xā</i>	<i>ko</i>	<i>kio</i>	<i>kwo</i>	<i>ngiwo</i>	<i>ku</i>	<i>kiu</i>
Ts'ie yün	<i>ka</i>	<i>kwa</i>	<i>ia</i>	<i>kuo</i>	<i>k\xwo</i>	<i>kuo</i>	<i>ngiu</i>	<i>k\xu</i>	<i>kiu</i>
*									

### THE TS'IE YÜN FINALS $\gamma u$ , $-\dot{\gamma}u$ , $-\acute{a}u$ , $-au$ , $-\dot{\gamma}äu$ , $-ieu$ AND THEIR ARCHAIC VALUES.

Simon's theory that all these finals had an archaic guttural (»-γ») I have already (J. R. A. S. 1928) criticized as being too bold and sweeping. We have to go slowly and examine each category according as it rimes with other word groups in the archaic poetry. Li Fang-kuei, in his above-mentioned article, has extensively studies these word groups and proposed some Arch. values for them. I cannot at all accept his results, for reasons to which I shall revert presently, except on one principal point (a very important one), and some minor details.

There are, from the point of view of the Shī rimes, 6 final types of these Ts'ie yün finals, to which I add, in my scheme here, in order to facilitate our discussion, 3 more with the Ts'ie yün finals  $-\dot{\alpha}i$ ,  $-i$ ,  $-\dot{\gamma}u$ , already discussed above:

$\alpha$	$\beta$	$\gamma$	$\delta$	$\varepsilon$	$\zeta$	$\eta$	$\theta$	$\iota$
後	母	久	休	老	包	陶	蕭	高
$\gamma u$	$\gamma u$	$-\dot{\gamma}u$	$-\dot{\gamma}u$	$-\acute{a}u$	$au$	$-\dot{\gamma}äu$	$du$	$-\dot{\gamma}äu$
								廟
								苔
								來
								基
								取
								$ts'iu$
								$-\dot{\gamma}u$

Category  $\alpha$ , type 後  $\gamma u$ .

The characterizing feature of this category is that it never rimes with the rest of the  $-\gamma u$ ,  $-\dot{\gamma}u$ ,  $-\acute{a}u$ ,  $-au$ ,  $-\dot{\gamma}äu$ ,  $-ieu$  ( $\beta$ — $\zeta$ ) as shown by our tables IV—VII, but only with category  $\iota$ , type 取  $ts'iu$  (table XV). Neither type 後, nor type 取 have connections with »ju sheng» words, and therefore have no final guttural (see p. 131 above). Li has proposed that cat.  $\alpha$  後  $\gamma u$  was an Arch. -u: \*g'u etc. I perfectly agree with this opinion of his — all the more willingly since I have already pointed out this possibility in my T'oung Pao article, not seen by him when he wrote his treatise. In fact, in order to realize how plausible this theory is, we need only draw up a table of the Ts'ie yün rimes -u and -o:

Ist division of the Sung rime tables: 沽 *kuo* —  
 IIIId    »    »    »    »    »    居 *kiwo*    駒 *kiu*

Parallelism leads us to expect a Ts'ie yün rime -u (*ku*, *tu* etc.) but it turns out that the simple syllable type *ku* is entirely missing in the Ts'ie yün language.

Such words: *ku*, *tu* etc. have undoubtedly existed in Arch. Chinese, but have disappeared as soon as a parasitic vowel has cropped up in the syllable: *ku* > *k'u*, just as in German *hūs* > *həus*. Thus 後 \**g'u* > Ts'ie yün *γəu*. This is the reason why category *a* 後 \**g'u* regularly rimes with category *i* 取 *ts'iu*.

Categories *β* and *γ*, types 母 *məu* and 入 *kəu*.

The Archaic values of these categories have already been determined above. 母 was \**mug*, 入 was \**kiug*, riming as such with the next (table IV).

Categories *η* and *θ*, types 來 *ləi*, 基 *kəi*.

These have equally been determined above. 來 was \**ləg*, 基 was \**kəiəg*, riming as such with the preceding (table IV). All four categories *β*, *γ*, *η*, *θ* \**mug*, \**kiug*, \**ləg*, \**kəiəg* frequently rime with »ju sheng» words of types 服 \**b'iuk*, 德 \**tək*, 食 \**d'uək* (table III).

Category *δ*, type 休 *χəu*.

The striking fact about this category, clearly brought out by the splendid researches of Tuan Yü-ts'ai, is that in spite of its congruence with cat. *γ* in Ts'ie yün (both *-iəu*) it does not rime with type *γ* 入 *kəu*. Isolated exceptions do occur, but on the whole the two categories are kept strictly apart (see tables III, IV on the one hand, tables V, VII on the other).<sup>1)</sup> The determination of the Archaic value of cat. *δ*, 休 is a great crux, and it has to be discussed in connection with the following categories.

Categories *ε* and *ζ*, types 老 *ləu* and 高 *kəu*. Tuan Yü-ts'ai has divided the Ts'ie yün rimes -*əu* (-*au*, -*iəu*, -*eu*) into two categories of words, of which the one, *ε*, type 老, frequently rimes with cat. *δ* 休 *χəu*, the other, *ζ*, type 高, on the whole keeps clear of such connections with *δ* 休 *χəu*. I have arranged my tables so as to conform to Tuan's categories; Tuan's cat. *ε* 老 contains all the -*əu* (-*au*, -*iəu*, -*eu*) words in table V, his cat. *ζ* 高 all the -*əu* (-*au*, -*iəu*, -*eu*) words in table VI. Tuan's distinction, however, is not rigorously carried through in the Shi: the numerous cases given in our table VII Tuan has to reckon as »exceptional rimes».

<sup>1)</sup> The category *δ* has always the final *-iəu*, with medial *i*; it contains only a few words *məu*, *b'u* which lack it. Since the *b'u* in question (慕) has the alternative reading *b'iəu*, I conclude that these labial-initialled words all had *i* earlier: *məu*, *b'u*, but that in Ts'ie yün time the language vacillated between forms with preserved *i* (e. g. 犁 *məu*) and such with lost *i*.

To sum up: if for the time being we agree to consider the rimes of table VII as »exceptional» and follow Tuan in his classification, the regular Shī king rime groups are four (apart from connections with »ju sheng» words, as illustrated by tables III and XII):

	Ts'ie yün:	Shī king:
1) 後: 取 ( $\alpha : i$ )	$\gamma \text{əu}: ts'iu$	$g'u ts'iu$
2) 母: 久: 來: 基 ( $\beta : \gamma : \eta : \theta$ )	$məu: k̥iəu: ləi: kji$	$mug: k̥iug: ləg: k̥iəg$
3) 休: 老 (包, 陶, 蕭) ( $\delta : \varepsilon$ )	$\chiəu: ləu (pau, iəu, sieu)$	? ?
4) 高 (郊, 廟, 苞) ( $\zeta$ )	$kāu (kau, miāu, d'ieu)$	?

We have seen that categories  $\alpha$ ,  $i$  had no final guttural (as against Simon's theory), whereas  $\beta$ ,  $\gamma$ ,  $\eta$ ,  $\theta$  all had  $-g$ . In regard to  $\delta$ ,  $\varepsilon$ ,  $\zeta$  there are very good reasons to believe that at least the great majority of these words had really a final guttural. Our table XII shows a frequent riming with real »ju sheng» words, and the »hie sheng» reveal a guttural in many more word groups of these categories. Ample proofs of this are furnished by our table on p. 152 below. All the words in each group frequently interchange in the Shī rimes, and since the syllable type in Ts'ie yün (-əu, -au, -iəu, -ieu) makes a vocalization of  $-g$  into  $-u$  probable (cf. the modern Pek. 脚 *ts̥iau* from Ts'ie yün *kiak* etc.), we can safely operate with Arch.  $-k$  and  $-g$  forms (according to the rules p. 120 above) in these categories. The great difficulty is the vocalism.

Li Fang-kuei has proposed the following values:

$\beta$  母 *məg*,  $\gamma$  久 *k̥iəg*,  $\delta$  休 *χiəwg*,  $\varepsilon$  老 *ləwg*,  $\zeta$  高 *kāwg*,  $\eta$  來 *ləg*,  $\theta$  基 *k̥iəg*.

Some of these values are inadmissible for several reasons.

In the first place, it is true that they would satisfy the positive rime rules quite well:

$\beta: \gamma: \eta: \theta$  *məg: k̥iəg: ləg: k̥iəg*;  
 $\delta: \varepsilon$  *χiəwg: ləwg*;  
 $\zeta$  *kāwg*.

But it is equally obvious that they would not at all explain the negative rules. As said above, Tuan has shown that the Shī does not as a rule rime  $\gamma$  久 and  $\delta$  休, which is quite unreasonable with Li's values: *k̥iəg: χiəwg*. For, as I have shown earlier, Shī regularly rimes *iəm: iəm*, *iəng: iəng*, *ək: iək*: *iuk*. And *iəg: iəwg* are even more similar; it is inconceivable that they should not rime. This consideration, however, is of minor importance.

In the second place, there is Li's absolutely fatal supposition of  $-iəg$  both for  $\gamma$  𠂇 and for  $\theta$  基 ( $-əg$  for both  $\beta$  母  $məg$  and  $\eta$  來  $ləg$  would be no obstacle, since the former category has only words with labial initial, the latter only words with other initials; the different initials could explain a diverging development). It is all the more fatal since it concerns large groups of words. Here Li's system sins against a fundamental rule of linguistics. If, with Li, 基 and 𠂇 both were Arch.  $*kiəg$ , it is impossible that the former could have become Ts'ie yün  $kji$  but the latter  $kiəu$ . That 疑 was Arch.  $*ngiəg$  and became Ts'ie yün  $ngji$ , but that at the same time 牛 was Arch.  $*ngiəg$  and became Ts'ie yün  $ngiəu$  is out of the question. There must have been a fundamental Arch. difference between  $\gamma$  𠂇 and  $\theta$  基; they could not both be  $-iəg$ . I have already solved this riddle in a way that satisfies the Shi system: 母  $*mug$ : 𠂇  $*kiug$ : 基  $*kiəg$  (see my second section above).

In the third place, Li's interpretation of  $\delta$  休 as  $*χiəwg$  and  $\varepsilon$  老 as  $*ləwg$  is highly unsatisfactory. Syllable types like  $χiəwg$ ,  $ləwg$  are to my mind inadmissible, except as a transitory stage. If we were to operate with them, we should either have to imagine that the  $-wg$  was the vestige of some final consonant complex ( $[χiə]lg$  or some such combination), which conflicts with the nature of the Sinitic languages; or we should have to say that  $w$  was simply a first symptom of the vocalization of the final  $-g$ : 休  $χiəg$   $>$   $χiəwg$   $>$   $χiəu$ . This latter alternative could be quite reasonable in itself. But it would only aggravate our difficulties; for if  $\delta$  休 were an original  $*χiəg$  which had turned into  $*χiəwg$  in Shi king time, why had not  $\theta$  基  $*kiəg$  also become  $kiəwg$ ? And Li, who takes  $\gamma$  𠂇 as well to be an Arch.  $kiəg$ , would have to give reasons why one and the same original final, under identical conditions (i. e. after guttural initial), should have developed in 3 different ways:

1. 休  $χiəg$   $>$  Shi  $χiəwg$   $>$  Ts'ie yün  $χiəu$ ;
2. 基  $kiəg$   $>$  Shi  $kiəg$   $>$  Ts'ie yün  $kji$ ;
3. 𠂇  $kiəg$   $>$  Shi  $kiəg$   $>$  Ts'ie yün  $kiəu$ .

All this is plainly impossible.

In the fourth place, Li's system, which seizes upon Tuan's distinction between two kinds of Ts'ie yün  $-əu$  ( $\varepsilon$  老 and  $\zeta$  高, the former of which rimes with  $\delta$  休), and explains the first one as having Arch.  $ə$  for principal vowel, fails to function, when it comes to the corresponding categories:  $-au$ ,  $-iəu$ ,  $-ieu$ , 包  $pau$ , 陶  $iəu$ , 蕭  $sieu$ . They also rime with  $\delta$  休. If 老  $ləu$  was  $*ləwg$  because it rimed with 休  $χiəu$  ( $*χiəwg$ ), what were 包  $pau$ , 陶  $iəu$ , 蕭  $sieu$ ? Li leaves

this question unanswered, and with his fundamental idea about the 老: 高 classes, 包, 陶 and 蕭 are indeed impossible to place organically into his system.

Let us sum up: Li Fang-kuei's system fails because  $\gamma$  𠂇 is not kept distinct from  $\theta$  基, which is linguistically unallowable; because with his system  $\gamma$  𠂇 and  $\delta$  休 should rime in the Shī, which they do not; because his syllable type in  $\delta$  休 is unsatisfactory, being fundamentally the same as  $\theta$  基, from which it must be kept apart; and because his system does not allow of a good interpretation of 包, 陶, 蕭.

After this criticism, let us take up a detailed investigation of categories  $\delta$ ,  $\varepsilon$ ,  $\zeta$ , the only ones that are still to be determined.

Li's interpretation was fundamentally based on Tuan Yü-ts'ai's distinction of two classes of Ts'ie yün - $\dot{a}u$ :  $\varepsilon$  老 and  $\zeta$  高. He concluded that since the former rimes with 休  $i\dot{a}u$ , it had  $\varepsilon$  for principal vowel. This is the point where, in my opinion, he has gone astray. It is very likely that already the great Tuan himself has imagined different vowels in  $\varepsilon$  老 and  $\zeta$  高, though he constructed no sound values for his rime categories. But neither Tuan nor his followers seem to have observed the fundamentally important fact that the difference between  $\varepsilon$  - $\dot{a}u$  and  $\zeta$  - $\dot{a}u$  is not a difference of vowel but of tone. In my table V B, I have marked all - $\dot{a}u$  words that rime with - $i\dot{a}u$  by their tone figures: <sup>1</sup> means »p'ing sheng» (Wade »first and second tone»), <sup>3</sup> »shang sheng» and <sup>4</sup> »k'ü sheng». It is easily seen that the - $\dot{a}u$  that rime with - $i\dot{a}u$  are mostly words with the rising tone (shang sheng, <sup>3</sup>). Against 47 cases of - $\dot{a}u$ <sup>3</sup> riming with - $i\dot{a}u$  there are only 7 - $\dot{a}u$ <sup>1</sup> (and 5 - $\dot{a}u$ <sup>4</sup>) riming with - $i\dot{a}u$ ; and yet the language is much richer in - $\dot{a}u$ <sup>1</sup> words than in - $\dot{a}u$ <sup>3</sup> words. The Kuang yün gives 222 characters read - $\dot{a}u$ <sup>1</sup> and 148 read - $\dot{a}u$ <sup>3</sup>. The great majority of even tone words (p'ing sheng,<sup>1</sup>) are to be found in table VI, i. e. they do not so easily rime with  $\delta$  - $i\dot{a}u$  as those in the rising tone. The secret of this tonal peculiarity is difficult to unravel; but one thing is certain: we are *not* entitled to suppose an Arch. vocalism in  $\varepsilon$  老: other than that in  $\zeta$  高 <sup>1</sup>, because the former rimes more easily with  $\delta$  - $i\dot{a}u$ . It is important, in this context, to recall the numerous cases in table VII, which Tuan has to treat as »exceptional» rimes. They show that cat.  $\zeta$  高 (郊, 廟, 苑) also rimes with  $\delta$  休 - $i\dot{a}u$ , though less frequently than 老 (包, 陶, 蕭).

What we have to find is, consequently, not different vowel values for all the type words in categories  $\delta$ ,  $\zeta$ , but:

one for  $\delta$ , type 休, Ts'ie yün -*igu* (as distinguished from  $\gamma$  久 \**kiug*);  
 one for  $\epsilon$ ,  $\zeta$ , types 老 and 高, Ts'ie yün -*āu*;  
 one for  $\epsilon$ ,  $\zeta$ , types 包 and 郊, Ts'ie yün -*au*;  
 one for  $\epsilon$ ,  $\zeta$ , types 陶 and 廟, Ts'ie yün -*äu*;  
 one for  $\epsilon$ ,  $\zeta$ , types 蕭 and 蕭, Ts'ie yün -*ieu*.

Let us start with types 高, 郊, 廟, 蕭 (table VI). Li Fang-kuei has considered it an axiom that the Arch. principal vowel was here an »a« sound, and he therefore writes 高 \**kāwg* etc. This seems very plausible, and for a long time (long before reading Li's paper) I was of the same opinion. Therefore, in my J. R. A. S. article I wrote 高 \**kāg*, and I was inclined to interpret 郊 as \**kag*, 廟 as \**miag* and 蕭 as \**d'iaq*. But a closer investigation has convinced me that this is impossible.

I have already (p. 136) drawn attention to the fact that Ts'ie yün -*āng*, -*iang*, -*ang* (table X) never go together with Ts'ie yün -*ung*, -*ong*, -*āng* (table VIII), neither in the Shī rimes, nor in the »hie sheng« characters. And -*āk*, -*iąk*, -*vk* (table XI) keep clear of -*uk*, -*ok*, -*ak* (table IX) in just the same way. It is true that there are certain -*ak*, -*iąk*: 樂 *lāk*, 虧 *ngiak* etc. (table XII) that do not keep clear of -*ok*, -*ak* (which on the contrary have strong relations to these finals), but then these -*ak*, -*iąk* words are kept strictly apart (table XII) from the proper and original \*-*ak*, \*-*iąk*, \*-*vk* (各, 夕, 伯, table XI) and must have had some »o« class vowel for principal vowel. This has been duly realized by Li Fang-kuei, who proposes Arch. -*āk* (樂 \**lāk*) in these finals. He is undoubtedly right. The Arch. -*ak* has developed differently according to the initials:

	樂	角
Shī king	* <i>lāk</i>	* <i>kāk</i>
Ts'ie yün	<i>lāk</i>	<i>kāk</i>

Again, -*iąk* has become Ts'ie yün *iąk*, at the same time as original \**iąk* has been palatalized into -*iąk*:

	虧	夕
Shī king	* <i>ngiak</i>	* <i>dziak</i>
Ts'ie yün	<i>ngiak</i>	<i>ziäk</i>

We can state, then, that here, in »ju sheng«, the distinction \*-*ak*: -*iąk*: \*-*vk* (table XI): \*-*ok*, \*-*āk* (tables IX and XII) is indeed just as strict, in Shī and »hie sheng«, as the distinction \*-*āng*, \*-*iang*, \*-*ang*: \*-*ong*, \*-*āng*. The »a« words and the labial-vowelled words never mix.

This fact throws a new light on the words of types 高 *kāu*, 鄉 *kau*, 廟 *miāu*, 宮 *d'ieu*, and also on the other types discussed here: 休 *xiəu*, 老 *lāu*, 包 *pau*, 陶 *läu*, 舊 *sieu*. For their connections in the Shī rimes and in the »hie sheng» characters are *not* with original \*-āk, \*-iak, \*-vk (各, 夕, 伯 etc.) but with 樂 \*lāk, 虧 \*ngiāk etc. and, above all, with Ts'ie yün -uk, -ok, -āk! This is of extreme importance. The rime connections are given in table XII. As to the »hie sheng» phenomena, we shall choose some examples:

1告皓 2高敲 3到剗 4勞華 5暴臘 6毛翟○ 7告 8高嵩 9羔糕  
 10暴櫟 11冒瑁○ 12尾院 13奧燠 14賣窓 15面翠 16暴 17毛翟<sup>21</sup> 18筋筋<sup>19</sup>  
 冒船○ 20覽 21交較 22榮 23罩阜 24剗 25爆 26包鬯 27兒 28貌貌○ 29  
 膠戮<sup>30</sup> 29包寵○ 31尚稍○ 32夭沃○ 33呈鑑○ 34斂燎<sup>35</sup> 35掉阜○ 36蓼  
 戮<sup>37</sup> 37蕭蕭○ 38漱漱 39牙督○ 40畜 41面面 42丑扭 43由軸 44州洲 45  
 廖戮<sup>46</sup> 46悅 47壽壽 48俟俟 49漱漱 50搜(貨)趨 51宿 52繡肅 53秀透<sup>54</sup> 54就  
 跡<sup>55</sup> 55霍 56牙鶩○

- āu: -āk: 1. *kāu*: *k'āk*; 2. *kāu*: *k'āk*; 3. *tāu*: *t'āk*; 4. *lāu*: *lāk*; 5. *b'āu*: *pāk*;  
 6. *māu*: *māk* (and *muk*);
- āu: -uok: 7. *kāu* and *kuok*; 8. *kāu*: *yuok*; 9. *kāu*: *kuok*; 10. *b'āu*: *puok*;  
 11. *māu*: *muok*;
- āu: -uk: 12. *k'āu*: *k'uk*; 13. *āu*: *īuk*; 14. *tsāu*: *ts'īuk*; 15. *lāu*: *līuk*; 16.  
*b'āu* and *b'uk*; 17. *māu*: *muk* (and *māk*); 18. *māu* and *muk*; 19. *māu*:  
*muk*;
- au: āk: 20. *kau* and *kāk*; 21. *kau*: *kāk*; 22. *ngau* and *ngāk* and *lāk* (< \*lāk);  
 23. *t'au*: *t'āk*; 24. *t'au* and *t'āk*; 25. *pau* and *pāk*; 26. *pau*: *b'āk*;  
 27. *mau* and *māk*; 28. *mau* : *māk*;
- au: -uk: 29. *kau*: *līuk*; 30. *pau*: *p'uk*;
- iāu: -āk: 31. *siāu*: *śāk*;
- iāu: -uok: 32. *īāu*: *īuok*;
- iāu: -uk: 33. *īāu*: *tsuk*;
- ieu: -āk: 34. *kieu*: *k'āk*; 35. *d'ieu*: *t'āk*;
- ieu: -uk: 36. *lieu*: *līuk*; 37. *sieu*: *śiuk*;
- iżu: -āk: 38. *siżu*: *śāk* (and *śiuk*); 39. *miżu*: *māk*;
- iżu: -uk: 40. *xiżu* and *xiżuk*; 41. *iżu*: *śiuk*; 42. *t'iżu*: *ńiuk*; 43. *iżu*: *d'iżuk*;  
 44. *tsiżu*: *tsiżuk*; 45. *t'iżu*: *līuk*; 46. *tsiżu* and *tsiżuk*; 47. *ēiżu*: *ēiuk*;  
 48. *iżu*: *śiuk*; 49. *siżu*: *śiuk* (and *śāk*); 50. *siżu* (*səu*): *śiuk*; 51. *siżu*  
 and *śiuk*; 52. *siżu*: *śiuk*; 53. *siżu*: *śiuk*; 54. *dz'iżu*: *ts'iżuk*; 55.  
*p'iżu* and *p'iżuk*; 56. *miżu*: *muk*.

These examples amply show that the Ts'ie yün finals *-du*, *-au*, *-iäu*, *-ieu* (and also *-iäu* of cat. δ) had frequent connections in the archaic language with words that became Ts'ie yün *-uk*, *-ok*, *-äk* (i. e. Arch. \*-ok, -äk) and they clearly prove that *-du* etc. do not correspond to *-dng*, *-iäng* *-vng* and were Arch. \*-äg, *-iäg*, *-vg*, but that they correspond to Ts'ie yün *-ung*, *-ong*, *-äng* (ju sheng *-uk*, *-ok*, *-äk*). How will this work out in detail?

Let us start with the Ts'ie yün rime *-au* (a *aigu*) and with the »k'ü sheng« word 觀. This has two readings *käk* and *kau'*. Applying my earlier established law that *-u* is the trace of a *-k*, dropped because of the falling tone, and basing my argument on the great probability that the original difference was only one of tone (cf. 度 etc. above), I reconstruct:

観 \*käk\* »to perceive»;  
\*käk' »to awake».

The former, thanks to the even tone, has been preserved as such: Ts'ie yün *käk*. The latter has developed along lines with which we are already perfectly familiar: 江 *käng* has, during T'ang time, developed *käng* > *k<sup>4</sup>ang* > *kang* (as established by Maspero); 家 \**ka* has, already before T'ang time, become *ka<sup>a</sup>* > *k<sup>4</sup>a* > *ka*. Here, *käk'* has become *käk'* > *ka<sup>1</sup>* > Ts'ie yün *kau'*.

We then pass on to the 交 of the same Ts'ie yün rime *-au*, but with »p'ing sheng». It is phonetic in 較 *käk*. We cannot for 交 suppose an Arch. \**käk*; since it has no falling tone, a \**käk* should be preserved as such. We have to reconstruct \**käg*, which is highly satisfactory. This \**käg* has then evolved thus: \**käg* > *kä<sup>4</sup>g* > *kag* > Ts'ie yün *kau'*.

We have seen that Ts'ie yün *-au* derives from \**käk* and \**käg*. The same evolution we have to assume for Ts'ie yün *-iäu* and *-ieu*: *ä* and *e* are evidently, as proposed by Li Fang-kuei, a late result of *i*-umlaut; for earlier periods we have to reckon with *-iäu* and *-ieu*. Their parallel with *-au* is perfect:

陶, 廟 etc. *-iäu*(*-iäu*) derives from *-iäk'* or *-iäg* (the one or the other as revealed by the tone);

蕭, 蕭 etc. *-ieu* (*-ieu*) derives from *iäk'* or *iäg* (the one or the other as revealed by the tone).

We have now gone through the correspondences to 江 *-äng* (ju sheng 觀 *-äk*). The remaining rimes were Ts'ie yün *-ung*, *-iung* (東), *-uong* (冬), *-iowong* (鍾) (ju sheng *-uk*, *-iuk* 屋, *-uok* 沃, *-iok* 燭). I have already determined above that 東 *-ung*, *-iung* (ju sheng *-uk*, *-iuk*) derive from Arch. \*-ong, \*-iong (ju sheng \*-ok, \*-iok). Now, since the *-du* 老, 高 and *-iäu* 休 are clearly

»k'ai k'ou» words, not »ho k'ou» words, they cannot correspond to \*-uong, \*-iwong (ju sheng \*-uok, \*-iok) but must correspond to the »k'ai k'ou» 東 \*-ong, \*-iong (ju sheng 屋 \*-ok, \*-iok). We thus arrive, quite theoretically, at the following values:

**老**, 高 etc. -*au* derives from -*ok'* or -*og* (the one or the other as revealed by the tone);

**休** etc. -*igu* derives from -*ok'* or -*iog* (the one or the other as revealed by the tone).

-*ok'* and -*og* both > -*ou*, and -*ou* goes on to Ts'ie yün -*au*;

-*ok'* and -*iog* both > -*iou*, and -*iou* goes on to Ts'ie yün -*igu*.

Phonetically, there is nothing unnatural in these laws.<sup>1)</sup> Indeed, they form an excellent parallel to the German evolution *ei* > *ai* (*bei* pronounced *bai*), in which a tendency of differentiation has caused the first of the two palatal vowels *e:i* to change into an *a*, which sets off more clearly against the *i*. Here, of the two labial vowels *o:u*, the first one is delabialized into *â* and *ə* thanks to a similar tendency of differentiation.

So much for the theoretical conclusions, based on considerations of parallelism with corresponding word groups ending in -*ng* and -*k*, and of the general phonetic system of Archaic Chinese. But the value of these deductions depends entirely upon how they fill the practical demand that they should satisfy both the Shī rimes and the »hie sheng» characters. If they do, we can consider them as safe and definite results. A glance at tables V B, VII and XII, where I have inserted, in the column to the right, the values proposed here, convinces us that they explain the Shī king rimes perfectly. And exactly the same can be said of the result, if we give the »hie sheng» table of p. 152 above with these new reconstructed values:

1告皓	2高敲	3到剗	4勞華	5暴脹	6毛髦	7告	8高鬻	9羔糕
10暴縷	11冒瑁	12尻阮	13奧燠	14畜畜	15面夢	16暴	17毛髦	18務
冒船	19	20覺	21交較	22衆	23罩卓	24剗	25燥	26包鬯
膠戮	27	28貌邈	29	20	21	22	23	24
28	29	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35
28	29	30	31	32	33	34	35	36
27	28	29	30	31	32	33	34	35
26	27	28	29	30	31	32	33	34
25	26	27	28	29	30	31	32	33
24	25	26	27	28	29	30	31	32
23	24	25	26	27	28	29	30	31
22	23	24	25	26	27	28	29	30
21	22	23	24	25	26	27	28	29
20	21	22	23	24	25	26	27	28
19	20	21	22	23	24	25	26	27
18	19	20	21	22	23	24	25	26
17	18	19	20	21	22	23	24	25
16	17	18	19	20	21	22	23	24
15	16	17	18	19	20	21	22	23
14	15	16	17	18	19	20	21	22
13	14	15	16	17	18	19	20	21
12	13	14	15	16	17	18	19	20
11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9

<sup>1)</sup> This theory implies that we have to operate with a different date for the weakening of the final -*k'* after different vowels. In 路 \*glák', 度 \*d'ák', 夜 \*ziak', i. e. after *â*, *a*, it had already taken place in Chou time, at least in the Shī king dialect, where we have to assume an implosive -*k*:

-ok', -og: *åk'*: 1. *kok'*: *k'åk*; 2. *kog*: *k'åk*; 3. *tok'*: *t'åk*; 4. *log*: *låk*; 5. *b'ok'*: *påk*; 6. *mog*: *måk* (and *mok*);

-ok', -og: *uok'*: 7. *kok'* and *kuok'*; 8. *kog*: *g'uok*; 9. *kog*: *kuok*; 10. *b'ok'*: *puok*; 11. *mok'*: *muok*;

-ok', -og: *ok'*: 12. *k'og*: *kiok*; 13. *ok'*: *·iok*; 14. *tsok'*: *ts'·iok*; 15. *glog*: *gliok*; 16. *b'ok'* and *b'ok*; 17. *mog*: *mok* (and *måk*); 18. *mog* and *mok*; 19. *mok'*: *mok*;

-åk', -åg: *åk'*: 20. *kåk'* and *kåk*; 21. *kåg*: *kåk*; 22. *ngåk'*, *ngåk* and *låk*; 23. *tåk'*: *tåk*; 24. *tåk'* and *tåk*; 25. *påk'* and *påk*; 26. *påg*: *b'åk*; 27. *måk'*: *måk*; 28. *måk'*: *måk*;

-åg: -ok: 29. *klåg*: *gliok*; 30. *påg*: *p'ok*;

-iåk': *åk*: 31. *siåk'*: *såk*;

-iåg: -uok: 32. *·iåg*: *·uok*;

-iåg: -ok: 33. *diåg*: *tsok*;

-iåk': -åk: 34. *kiåk'*: *k'åk*; 35. *d'iåk*: *tåk*;

-iåg: -ok: 36. *gliåg*: *gliok*; 37. *siåg*: *siok*;

-iok', -iog: -åk: 38. *siok'*: *såk*; 39. *miog*: *måk*;

-iok', -iog: -ok: 40. *xiok'* and *xiok*; 41. *ziog*: *siok*; 42. *t'iog*: *niok*; 43. *diog*: *d'iok*; *t'iog*: *t'iok*; 45. *t'liog*: *gliok*; 46. *t'iok'* and *t'iok*; 47. *d'iog*: *d'iok*; 48. *diog*: *siok*; 49. *siok'*: *siok*; 50. *siog* (sug): *siok*; 51. *siok'* and *siok*; 52. *siok'*: *siok*; 53. *siok'*: *siok*; 54. *dz'iok*: *ts'·iok*; 55. *p'iok'* and *p'iok*; 56. *miog*: *mok*.

We have now arrived at the positive result that the words with Ts'ie yün -åu, -au, -iäu, ieu, -igu (δ) in Archaic Chinese had an »o« vocalism (corresponding to \*-ong, \*-ok etc.) and had no »a« vocalism (corresponding to -ång, -åk etc.). Were there, then, in Archaic Chinese, no syllables -åg, -iag, -og corresponding to \*-ång, \*-iång, \*-vng (table X) and to \*-åk, \*-iåk, \*-våk (table XI)? It seems very unreasonable that there should be none. And yet I find no word group that can be suspected of representing such Archaic syllables. It must be pointed out, however, that Simon (Tibetisch-Chinesische Wortgleichungen) has tried to identify on the one hand Chin. 鵠 \*ngd with Tib. *ngang*, on the other hand Chin. 沙 \*sa with Tib. *sag*, and finally Chin. 蟻 \*ngia with Tib. *s-grog* and Chin. 遊

路 *glok'*, 度 *d'ok'*, 夜 *ziok'* in order to understand why these words rime with -uo, -iwo, and why they do not rime with \*-ok, \*-uok. On the contrary, after o and å (到 *\*tok'*, 喬 *kåk'*) the -k was fully preserved in Chou time, since such words freely rime with words with Ts'ie yün ju sheng (e. g. XII, 552, 271). It was much later (Han time?) that -ok', >-ou >-åu and åk >-au.

*sia* with Tib. *sog*. This seems quite tempting, in view of the very concrete senses of these words, identical on both sides, and we should then have to suppose Proto-Chinese 鵠  $**ngd\acute{g}$ , 沙  $**sag$  蟻  $**ngrag$ .<sup>1)</sup>

However this may be — I have no opinion in the matter — it is certain that already in Archaic Chinese (the whole Chou epoch) these words lacked final consonant: \**ngd*, \**sa*, \**ngia*, as attested both by the Shī rimes and by the *shie sheng* characters.

There is one more word category that might be suspected of having Arch. -*ag* or -*vg*, and I take up the question here in order to show that after all such an idea is not tenable. There are the words 戰 (with derivates), 駭, 獄 Ts'ie yün *kai*, *γai*, *dz'qi* (with short *a*), in the Ts'ie yün brought under rime 皆 (and corresponding rime in »shang sheng«) together with a number of words of a totally different origin. 戰 rimes in the Shī with  (table III); 駋 has the phonetic 玄 \**g'əg*, 獄 the phonetic 才 \**dz'əg*. There can thus be no doubt about their final guttural. If we search for a word group corresponding to a wanted Arch. \*-*vg*, why not accept these 戰 etc. as the missing category: *kai* < \**kvg*?

There are, in fact, several reasons that forbid such an interpretation. We have seen that \*-*āng*: \*-*iang*: \*-*vng* frequently rime (table X), and similarly \*-*āk*: \*-*jak*: -*vk* (table XI). On the other hand -*g* words often rime with -*k* words. We should therefore expect 戰 etc., if they were \**kvg* etc., to rime with -*āk*, -*jak*: -*vk* (XI); but they never do. Instead of that, they rime with -*ək* (table III). This is fatal; for \*-*āk*, \*-*jak*, \*-*vk* never rime with \*-*ək* (see tables II and XI). Therefore, if 戰 were \**kvg*, it would never rime with  \**kwək*, which it does.

There is yet another reason, and even more important: we can determine another origin for the 戰 -*ai* group.

There are, in the Ts'ie yün system, two rimes which I have not previously been able to distinguish in sound: 庚 and 耕 (IID division of the Sung rime tables), and, corresponding in the »ju sheng«, 陌 (e. g. word 格) and 夢 (e. g. word 莖). I have written -*vng*, -*vk* for them both, and a guess on my part that the first -*vng* was short and the second was long-vowelled was very unsatisfactory; the very nature of the *v* in the Chinese phonological system is to be the short, slack sound, corresponding to the long, tense *ā*, *a*. A reference to the Shī rimes will, however, help us to perceive what constituted the difference. There is a large »ā—e« group quite independent of the »ə« and »a« groups:

<sup>1)</sup> This, of course, would not entail such a final consonant in all words with \*-*ā*, -*a*, -*ia*.

short	short	long	short	short	long
恆 <i>əŋ</i>	庚 <i>vŋ</i>	剛 <i>āŋ</i>	得 <i>ək</i>	格 <i>vk</i>	各 <i>āk</i>
兢 <i>iəŋ</i>	京 <i>iŋŋ</i>	僵 <i>iaŋ</i>	亟 <i>iək</i>	逆 <i>ivk</i>	夕 <i>*iak</i>
but:					
short	耕 <i>əŋ</i>	革 <i>ək</i>			
long	輕 <i>iāŋ</i>	益 <i>iäk (?)</i>			
long	經 <i>ieng</i>	擊 <i>iek</i>			

Instead of writing 耕 *kong* and 革 *kkk*, as in my Phonologie and my Analytic Dictionary, I here adopt the graphs *keng* and *kek*, because of the important fact that whereas the categories 庚 *kvng* and 格 *kkk* often rime with the *-āŋ*, *-iaŋ* and *-āk*, *-iak* categories respectively (see tables X, XI) and therefore evidently had an *»a«* vocalism in Arch. Chinese (short, as the dialects show, hence *v*), the categories 耕 and 革 do *not* rime with the *»a«* categories but with other groups: the former (p'ing, shang and k'ü sheng) with *-iāŋ*, *-ieng*,<sup>1)</sup> the latter (ju sheng) with *-ək* (see table III). They must therefore have had some kind of *ä—e* sound, though a short one, in contradistinction to *-iāŋ*, *-ieng*. It is tempting, according to the analogy of group *-n*:

愆 *-iān* 堅 *-ien* but 巾 *kiēn*

to write:

輕 *-iāŋ*, 經 *-ieng* but 耕 *kēng*.

But, after all, there is the difference of the medial *i* in the former, and it seems clear that the vowel has been much more open (since it becomes *a(g)u* in Kan-on) in these words without medial *i*. Therefore I choose an independent graph *ε*, which consequently stands for an open, short *ä* sound<sup>2)</sup>.

If we now go back to the table above, and look for a *-g* correspondence to *-eng*, *-ek* (II<sup>d</sup> division of the Sung rime tables), it is obvious that we have to put in 戒 *kai* < *\*keg* (observe that *-əi* is equally a II<sup>d</sup> division rime). That this is so follows from the parallel with the *»ju sheng«* 革 *kek*. Just as this regularly rimes with *-ək* in the Shī (table II), so 戒 also regularly rimes with *-ək* (table

<sup>1)</sup> It is a curious fact that 生 *sŋŋ* (with derivatives), which in Kuang yün belongs to rime 庚 and not to 耕, does not rime in *»a«* fashion like 行 *vŋŋ* etc. (various 庚 words in table X) in the archaic poetry, but goes, like the 耕 words, together with the 輕 and 經 words (*»ä-e* fashion). It must have been an Arch. *sŋŋ*.

<sup>2)</sup> Possibly something similar to the vowel in Engl. *man*. The difference between 庚 *kong* and 耕 *keng* would thus be something like the contrast between Engl. *spun*, (*pvn*) and *pan*, (*pen*).

III); and 騞 (*yəi* <) \**g'eg* has 亥 (*yəi* <) \**g'əg* for phonetic. We have here arrived at two important results: we have found the phonetic difference between the Ts'ie yün rimes 庚 (-*vng*) and 耕 (-*eng*), and we have shown that group 戚 (-*ai*) corresponds to 耕 -*eng*, 草 -*ek*, being Arch. \*-*eg*, not to the »*a*» categories 庚 (-*vng*), 格 (-*vk*). The \*-*ng* that should correspond to -*vng* and -*vk* must consequently be sought for elsewhere; I do not know where it is to be found, if it existed at all.

We now revert once more to our scheme on p. 146 above, and fill in the Arch. values, such as we have established them in the preceding discussion:

	$\alpha$	$\beta$	$\gamma$	$\delta$	$\varepsilon - \zeta$		$\eta$	$\theta$	$\iota$
後									
母									
久									
休									
老									
高									
包									
郊									
陶									
廟									
蕭									
宮									
來									
基									
取									
Shi	<i>u</i>	<i>ug</i>	<i>iug</i>	<i>iog</i>	<i>og(-k)</i>	<i>åg(-k)</i>	<i>iåg(-k)</i>	<i>iåg(-k)</i>	<i>øg</i>
Ts'ie yün	<i>zu</i>	<i>zu</i>	<i>izu</i>	<i>izu</i>	<i>åu</i>	<i>au</i>	<i>iäu</i>	<i>ieu</i>	<i>åi</i>
									<i>iu</i>

And the Shī rime scheme on p. 148 fills up thus:

	Shī'sie yün:	Shī king:
1) 後: 取	<i>γəu: ts'iu</i>	<i>g'u: ts'iu</i>
2) 母: 久: 來: 基	<i>məu: kizu: ləi: kji</i>	<i>mug: kιug: ləg: kιəg</i>
3) 休: 老: 包, 陶, 蕭	<i>χiəu: ləu: pau: iäu: sieu</i>	<i>χiog: log: pag: diåg: siåg</i>
4) 高: 郊: 廟: 宮	<i>kåu: kau: miäu: d'ieu</i>	<i>kog: kåg: miåg: d'iåg</i>

Rime groups 3 and 4 are artificially distinguished by Tuan Yü-ts'ai; they often mix (see table VII). Yet, as stated above, the -*iog* of group 3 preferably rimes with -*og<sup>3</sup>* in »shang sheng», much more rarely with -*og<sup>1</sup>* in »p'ing sheng» — whatever the reason may have been for this.

The categories  $\gamma$  \*-*iug* and  $\delta$  \*-*iog* which on the whole are kept apart in the Shī rimes, often go together in the »hie sheng» characters, which is quite natural in view of their phonetic similarity. There is, for instance, the word 九 *kizu* »nine». As far as I know, it occurs nowhere as a rime in the archaic poetry. Its derivate 究 rimes in cat.  $\delta$  (and was therefore \**kιog*), but its rôle in »hie sheng» like 軌 *kjwi* < \**kιwəg* indicates that it belongs to cat.  $\gamma$ , thus \**kιug*; this is supported by its forms in other Sinitic languages, Tibetan *d-gu* etc. (cf. my T'oung Pao article). A similar fluctuation of a »phonetic» between the two Shī rime groups is observable in 求 which (with 述) was \**g'iog* (riming in cat.  $\delta$ ), whereas 裳 was \**g'iug*, riming regularly in cat.  $\gamma$ . And 舊 rimes in cat.  $\gamma$  and was therefore \**g'iug*; 老 rimes in cat.  $\delta$  and was \**g'iog*.

In the tables inserted here I furnish a list of the Shī rimes under debate, the figures indicating the page in Legge's edition. The list is complete for most of the groups. In order to save space I have, however, excluded some rimes in groups I, II, IV, XIII, XVI, which teach us nothing, since both members end in the same Ts'ie yün vowel (-əŋ: -iəŋ, -ək: -iək, -i: -wi, -uo: -iwo, -əm: -iəm); of category X, which is extremely common in the Shī, I have given only a few examples.

In each table, after the Shī rimes, I give a phonetically arranged list of the words occurring in those rimes. The reader can here survey at a glance all the words that interchange freely as one rime category; he has to subtract, however, those words that are placed at the end in brackets—they do not properly belong to this category but occur here only as *exceptional* rimes, due to poetical license, or, in certain cases where the rime is strikingly bad, to corruptions in the text. It is highly interesting to observe that in many cases the readings of the Han, Ts'i and Lu versions (the characters placed in parenthesis in the rime lists) are correct rimes and therefore probably correct readings, where the Mao version has unsatisfactory rimes.

Under each table are twoo columns with transcribed readings. The one to the left represents the reconstructed Ts'ie yün language (6th cent. A. D.); the one to the right gives the Shī king values such as I have tried to reconstruct them here. It must be borne in mind that the Shī forms are not so safe in every detail as the Ts'ie yün forms. These latter are based on a very rich fund of sources, which support and throw light on each other: Ts'ie yün spellings (»fan ts'ie»); rime tables from the Sung era; ancient transcriptions of foreign words; thousands of ancient Chinese loan words in Korean, Japanese and Annamite; and strongly varying modern dialects. For the archaic language we have only the archaic poetry and the »hie sheng» characters to build upon. The former gives good points d'appui for the riming parts of the words, as shown above. The latter reveal the archaic initial system on many points. But we cannot be entirely sure that there did not exist consonant groups (*pl*-, *tl*-, *kl*- etc.) where the »hie sheng» do not reveal them. Moreover, the medial *u*, *w*, *i*, *ɨ* may have been somewhat different in Shī king compared with T'sie yün time. A form like 宮 \*ki<sup>long</sup> should therefore properly be written thus: \*ki|long, indicating that only the final part is quite safe, the initial part only approximately so, a tentative first half which has to be taken *cum grano salis*. This being once clearly stated, the reader is warned, and I need not carry through that clumsy typographical arrangement in my tables.

## I

131 棚弓 151 夢薨憎 195 脣弓 脣與音 307 興夢 310 蒸雄競崩肱升 320 蒸夢勝憎 320 陵懲夢雄 413 弓繩 630 乘膝弓綫增脣懲承。  
 1 脣 2 增憎 3 崩 4 競 5 興 6 脣 7 懲 8 蒸 9 繩 10 乘 11 升 12 陵  
 13 滂 14 肱 15 膜 16 弓 17 兮 18 夢 19 音 20 綫  
 1 *d'əng* 2 *tsəng* 3 *pəng*; 4 *g'iəng* 5  
*χəng* 6 *d'iəng* 7 *d'iəng* 8 *ts'iəng* 9 *d's'iəng*  
 10 *χ'iəng* 11 *siəng* 12 *liəng* 13 *p'iəng*; 14  
*kwəng* 15 *χwəng*; 16 *kiung* 17 *yiung*  
 18 *miung, mung*; [19. *iəm* 20 *ts'iəm*].

1 *d'əng* 2 *tsəng* 3 *pəng*; 4 *g'iəng*, 5  
*χəng* 6 *d'iəng* 7 *d'iəng* 8 *ts'iəng* 9 *d's'iəng*  
 10 *d'iəng* 11 *siəng* 12 *liəng* 13 *p'iəng*; 14  
*kwəng* 15 *χwəng*; 16 *kiung* 17 *g'iung*  
 18 *miung, mung*; [19. *iəm* 20 *ts'iəm*].

## II

29 草綫食 70 麥北弋 90 麥極 108 側服 123 麥國食 164 輯側直僅特食 173 麥德國直 221 翼服息 223 翼服 258 福食德 284 則服 284 翼服國 288 翼更服草 307 翼棘草 386 直直福 376 翼或稽食 400 福德 432 億服 432 德福 436 翼福國 456 德色草則 460 德服 464 北服 478 億福 483 福億 510 克服德力 620 德服齒 630 稷福穆麥國稽 647 國福。  
 1 克 2 億 3 特 4 則 5 北 6 棘棘 7 極 8 矢 9 翼 10 翼 11 億 12 直 13 側食 14 稷 15 稷色 16 力 17 稷 18 息 19 國 20 線 21 草 22 齡 23 麥 24 福轄 25 服 26 嗣 27 穆

1 *k'ək* 2 *tək* 3 *d'ək* 4 *tsək* 5 *pək*; 6  
*kiək* 7 *g'iək* 8 *χiək* 9 *iək* 10 *iək*  
 11 *iək* 12 *d'iək* 13 *ts'iək* 14 *d's'iək* 15 *siək*  
 16 *liək* 17 *ts'iək* 18 *siək*; 19 *kwək* 20  
*iwək*; 21 *kek* 22 *kwək* 23 *mwek*; 24 *piuk*  
 25 *b'iuk* 26 *iuk*; [27 *liuk*].

1 *k'ək* 2 *tək* 3 *d'ək* 4 *tsək* 5 *pək*; 6  
*kiək* 7 *g'iək* 8 *χiək* 9 *d'iək* 10 *giək* 11  
*iək* 12 *d'iək* 13 *ts'iək* 14 *d'iək* 15 *siək*  
 16 *liək* 17 *ts'iək* 18 *siək*; 19 *kwək* 20  
*giwək*; 21 *kek* 22 *kwək* 23 *mwek*; 24  
*piuk* 25 *b'iuk* 26 *iuk*; [27 *gliok*].

## III

136 來贈 262 翼服戒棘 265 牡來載棘 284 飭服急(戒)國 303 菩(舊)特富異 320 輯載意 336 克富又 357 載息 357 來服 373 棘稷翼億食祀侑福 374 祀食福式稷救極億 382 祀黑稷福 442 直載翼 446 載備祀福 458 圓伏 458 亞來 472 字翼 470 背翼福 483 子德 528 極背克力 540 事式 556 子已德國 559 戒國 569 塞來 564 戒背極匯識織 589 鮪祀福。

1 載 2 來 3 背 4 戒 5 已 6 異 7 翼 8 事 9 鮪 10 子 11 字 12 祀 13 備 14  
 鮪 15 又 16 固 17 菩富 18 克 19 黑 20 德 21 戒匯 22 特 23 塞 24 國 25 亞棘  
 26 極 27 翼 28 億 29 飭救 30 織 31 食 32 式識 33 稷 34 息 35 菩福輜 36 服伏  
 37 牧 38 贈 39 急。

1 *tsə̄i* 2 *l̄ai* 3 *pūi*; 4 *kai*; 5 *i* 6 *i* 7 *i*  
 8 *d̄z̄i* 9 *l̄i* 10 *tsi* 11 *dz̄i* 12 *zi* 13 *b̄jwi*  
 14 *jwi*; 15 *jigu* 16 *jigu*, *jiuk* 17 *pigu*;  
 18 *k̄ek* 19 *χek* 20 *t̄ek* 21 *t̄ek* 22 *d̄ek*  
 23 *sək* 24 *kwək*; 25 *k̄iək* 26 *ḡiək* 27  
*iək* 28 *iək* 29 *t̄iək* 30 *tsiək* 31 *d̄iək*  
 32 *siək* 33 *tsiək* 34 *siək* 35 *piuk* 36  
*b̄iuk* 37 *miuk*; [38 *dz̄əng* 39 *kiəp*].

1 *tsə̄k'* 2 *l̄əg* 3 *puək'*; 4 *keg*; 5 *ziəg* 6  
*giək'* 7 *iək* 8 *d̄z̄iəg* 9 *liəg* 10 *tsiəg* 11  
*dz̄iəg* 12 *dziəg* 13 *b̄iəg* 14 *giwəg*; 15  
*giug* 16 *giug*, *giuk* 17 *piug*; 18 *k̄ek* 19  
*χek<sup>1</sup>* 20 *t̄ek* 21 *t̄ek* 22 *d̄ek* 23 *sək* 24  
*kwək*; 25 *k̄iək* 26 *ḡiək* 27 *giək* 28 *iək*  
 29 *t̄iək* 30 *t̄iək* 31 *d̄iək* 32 *siək* 33  
*tsiək* 34 *siək* 35 *piuk* 36 *b̄iuk* 37 *miuk*  
 [38 *dz̄əng* 39 *kiəp*].

## IV

4 采爻 14 遼(道)仇 16 菖采有 33 沂以悔 42 緜治說 48 罷來思 53 惠來 55  
 軌社 55 子否友 61 久以 65 淇思姬謀 66 咎之 60 尤思之 101 嵩絲謀漢丘  
 塵期 101 惠哉 113 李亥 114 期哉時來思 120 淑母有 123 李子亥 128 于里杞母  
 143 晦已子喜 145 佩思來 168 岐母 197 采已 淑右沚 198 梅裘哉 204 惠佩 224 梅  
 緜駕 233 船趾子敵喜 233 狸裘 249 止杞母 251 駕緜謀 262 疾來 267 杞母 267 未  
 疾 270 鯉有 270 有時 271 來又 273 壺茱基期 273 杞李子母己 279 載善右 284 喜  
 往久爻鯉矣 288 芷敵試 293 有俟有右子 297 海止有母 300 來期思 314 士子  
 己殆仕 325 士宰史(凡) 325 時謀茱矣 325 里晦 329 仕殆使子有 333 止否 膽(膜)  
 謀 336 采負似 340 桧止母裏在 349 箕謀 349 丘詩之 352 耻久恃 357 來疾 357 表  
 試 350 梅尤 359 紀仕有 362 杞子事母 374 備戒告止起 376 理敵 379 甫籽疑止  
 子 370 止子敵喜右否有 382 戒事起敵 382 止子敵喜 385 右有似 392 期時朱  
 394 交喜 400 能又時 400 否史恥怠 400 嘴微郵 400 識又 415 牛哉 420 食誨載 432  
 時右 442 膽(膜)飴謀遍時茲 442 止有理敵事 456 悔祉子 464 芷仕謀子 472 芷  
 芷敵負紀 473 時祀博 483 紀友士子 489 理有 490 養子母 510 或止晦 510 時舊  
 518 交子 518 子否事耳子 518 子止悔 528 里喜能忌 535 紀宰右止里 556 理海  
 564 誘寺 564 倍事 564 富忌 567 富時疚茲 567 里舊 590 祉母 590 之思哉茲 603 以  
 婦士耜敵 607 紩依基牛羸 614 駢駕伾期才 615 始有子 630 煥富背試 630 善  
 母士有祉齒 638 有殆子 638 里止海。

1 海 2 能 3 來菜 4 臺怠殆 5 咎宰 6 載 7 采 8 才在 9 悔晦誨 10 倍  
 11 佩 12 椅痾 13 媒膜 14 罷 15 基姬箕紀 16 起杞芷微屺 17 駕淇期忌 18  
 疑 19 喜 20 以已矣蕩 21 飴 22 耻祉 23 治 24 止趾沚之 25 識 26 嵩齒餧 27  
 煥 28 士仕俊 29 時懈恃 30 史使 31 始詩 32 試 33 耳 34 李里裏狸理 35 子  
 未茲梓穠 36 沂耜淑似 37 食 38 恩絲 39 疾 40 遂道軌 41 休休 42 備駢 43  
 久亥疚 44 丘 45 衣仇依舊 46 牛 47 尤就又右友有 48 富否 49 負婦紩 50  
 謀 51 母敵 52 氏 53 膽 54 告 55 嘴 56 邮。

1 *χāi* 2 *nāi*, *nəng* 3 *lāi* 4 *d'āi* 5 *tsāi*  
 6 *tsāi* 7 *ts'āi* 8 *dz'āi* 9 *χuāi* 10 *puāi*  
 11 *b'uāi* 12 *muāi* 13 *muāi*; 14 *māi*; 15  
*ki* 16 *k'ji* 17 *g'ji* 18 *ngji*, *ngiək* 19 *χji*  
 20 *i* 21 *i* 22 *t'i* 23 *d'i* 24 *tsi* 25 *tsi* 26  
*ts'i* 27 *ts'i* 28 *dz'i* 29 *zi* 30 *si* 31 *si* 32 *si*  
 33 *nzi* 34 *li* 35 *tsi* 36 *zi* 37 *zi* 38 *si*; 39  
*kjwi* 40 *g'jwi* 41 *p'jwi* 42 *b'jwi*; 43 *kjəu*  
 44 *k'jəu* 45 *g'jəu* 46 *ngjəu* 47 *jiəu* 48  
*pjəu* 49 *b'jəu* 50 *mjəu*; 51 *məu*; [52 *ɛiə*  
 53 *mju* 54 *kuok*, *kāu* 55 *nau* 56 *jiəu*].

1 *χəg<sup>1</sup>*) 2 *nəg*, *nəng* 3 *leg* 4 *d'əg* 5  
*tsəg* 6 *tsək'* 7 *ts'əg* 8 *dz'əg* 9 *χnəg<sup>1</sup>*) 10  
*puəg* 11 *b'uəg* 12 *muəg<sup>1</sup>*) 13 *muəg*; 14  
*meg*; 15 *k'ięg* 16 *k'ięg* 17 *g'ięg* 18 *ngiəg*,  
*ngiək* 19 *χięg* 20 *zięg* 21 *dięg* 22 *t'ięg*  
 23 *d'ięg* 24 *t'ięg* 25 *l'ięk'* 26 *t'ięg* 27  
*t'ięk'* 28 *dz'ięg* 29 *d'ięg* 30 *sięg<sup>1</sup>*) 31  
*sięg* 32 *sięk'* 33 *nięg* 34 *lięg* 35 *tsięg* 36  
*dzięg* 37 *dzięk'* 38 *sięg*; 39 *kiwəg* 40  
*g'iwəg* 41 *p'iwəg* 42 *b'iwəg*; 43 *kiug* 44  
*k'iuug* 45 *g'iuug* 46 *ngiuug* 47 *giug* 48 *piug*  
 49 *b'iuug* 50 *mjuug*; 51 *mug*; [52 *d'ia*  
 53 *mjwo* 54 *kuok*, *kok'* 55 *någ* 56 *diog*].

V A.

4 鳴洲述(仇) 4 流求 17 休求 40 舟流憂游 50 舟游求救 102 巡舟游憂 112  
 夏求 186 周遊 192 阜手狩 195 收朝 239 錄道休 253 哀求 258 壽茂 262 柔憂 270 罷  
 酒 290 舟淳休 314 矛疇 325 憂休 329 流休 340 矛突 362 酒咎 392 首阜舅 401 首酒  
 432 哀孚 444 櫃趣 460 求孚 473 榆疇雙淳 486 游休酒 510 祝突 527 柔劉憂 564 收  
 婁 564 優憂 567 茂止 615 牡酒 621 虞搜 643 球旒休紓柔優逆。

V B.

32 昂初猶 35 包誘 50 手老<sup>3</sup> 65 潛<sup>2</sup>悠游憂 76 帰<sup>3</sup>道<sup>2</sup>魄 90 悠潛<sup>2</sup>憂 119 罩(罷)走<sup>3</sup>  
 慢覺 121 蒲叔 129 狩酒好<sup>3</sup> 131 鵠<sup>3</sup>首手阜 134 手魏好<sup>3</sup> 136 酒老<sup>2</sup>好<sup>3</sup> 143 濡膠膠 153  
 茂道<sup>3</sup>牡好<sup>3</sup> 175 休惄憂 177 楠<sup>3</sup>粗<sup>3</sup>帰<sup>3</sup>保<sup>3</sup> 182 疾究好<sup>3</sup> 202 祀矛仇(讐) 206 凶道<sup>3</sup>翁<sup>3</sup>  
 212 皓<sup>3</sup>櫛<sup>3</sup>受懼<sup>3</sup> 225 薦同 233 薦<sup>3</sup>稻<sup>3</sup>酒壽 233 蟹韭 256 帰<sup>3</sup>蓋牡舅咎 273 楠<sup>3</sup>粗<sup>3</sup>壽茂  
 288 譬老<sup>3</sup>猶魄 290 好<sup>3</sup>阜草<sup>3</sup>狩 293 戊<sup>3</sup>壽好<sup>3</sup>阜魄 307 皀茂好<sup>3</sup>猶 325 卵魄 333 猶集<sup>3</sup>  
 爰道<sup>3</sup> 340 道<sup>3</sup>草<sup>3</sup>擇老<sup>3</sup>首 349 受昊<sup>3</sup> 368 鑿洲妯猶 374 飽<sup>3</sup>首考<sup>3</sup> 376 酒牡考<sup>3</sup> 382 阜<sup>3</sup>好<sup>3</sup>  
 芳 415 幽膠<sup>3</sup> 418 莫猶 421 炮酉<sup>3</sup> 423 首罷飽<sup>3</sup> 472 道<sup>3</sup>草<sup>3</sup>茂<sup>3</sup>苞褒好<sup>3</sup> 498 休述<sup>3</sup>奴憂 518  
 告報<sup>3</sup> 556 游滔遊求 558 首休考<sup>3</sup>壽 559 遊騷<sup>3</sup> 559 芭流 590 牡考<sup>3</sup> 590 壽考<sup>3</sup> 592 壽保<sup>3</sup>  
 620 芷酒老<sup>3</sup>道<sup>3</sup>魄 620 陶囚。

V C.

46 冒好報 106 報好 126 好造 204 篓飽 207 菰椒 233 莪絪 277 草考 290 調同 340 好  
 草 425 草道 448 造士 489 曹軍匏 528 寶好 541 寶保 545 考保 552 道考 600 烏蓼。

<sup>1</sup>) The words III, 19 and IV, 1, 9, 12 belong to *shie sheng* series with *χ*: *m*- interchange, which indicates Arch. consonant groups (*χm*-, *mx*-, *km*-?). IV, 30 has *shie sheng* connections with *l*-, and this also points to some Arch. consonant group (*sl*-, *sl*-, *tl*-?).

1 鳩救突厥 2 求述銖球咎舅綠 3 休臭 4 慢優幽 5 游遊悠懲渝  
 6 誘萼猶櫛 7 輢 8 瘦 9 姑 10 桐 11 洲舟周 12 祝 13 魄 14 壽醜醜暨受  
 15 雙搜 16 狩收手首 17 乘蹕 18 流留劉鬱旒 19 枥 20 酒 21 秋 22 茜逆  
 菩因 24 秀 25 缶 26 阜浮匱 27 孚 28 犀 29 袞 30 戊茂牡 31 驟 32 考栲 33 好  
 34 皓是 35 老牢 36 禱持 37 懵酒 38 道翹翫綯 39 蟲亟 40 懵草 41 潛曹造  
 阜 42 婦騷 43 鴟保抱報寶 44 冒 45 覺 46 膠 47 欲 48 包苞飽 49 炮匏 50 卯  
 昂茆茅 51 菴 52 陶 53 椒 54 蓼 55 鳥 56 調 57 蕭蕪 58 罩 59 趣 60 止 61 仇 62  
 蓋 63 集 64 士 65 同

1 kiəu 2 g'ízəu 3 xízəu 4 iəu 5 iəu 6  
 iəu 7 t'iəu 8 t'ízəu 9 t'iəu 10 d'iəu 11  
 ts'iəu 12 ts'iəu 13 ts'iəu 14 éiəu 15 sízəu  
 16 sízəu 17 nízəu 18 lízəu 19 nízəu 20  
 tsízəu 21 ts'iəu 22 dz'iəu 23 zízəu 24 sízəu  
 25 piəu 26 b'iəu 27 b'iəu, b'iəu 28 miəu;  
 29 b'əu, b'iəu 30 məu; 31 káu 32 k'áu  
 33 xáu 34 yáu 35 láu 36 táu 37 t'áu 38  
 d'áu 39 tsáu 40 ts'áu 41 dz'áu 42 sáu  
 43 páu 44 máu; 45 kau 46 kau 47 nau  
 48 pau 49 p'au 50 mau; 51 g'iáu 52  
 iáu 53 tsíáu; 54 lieu 55 tieu 56 d'ieu 56  
 d'ieu 57 sieu; [58 p'iəu 59 ts'iəu 60 tsí  
 61 g'iəu 62 kjwi 63 dz'iəp 64 dz'i 65  
 d'ung].

1 kiəog 2 g'ízəog 3 xízəog 4 iəog 5 diəog  
 6 zízəog 7 t'iəog 8 t'ízəog 9 t'iəog 10 d'iəog  
 11 t'iəog 12 t'iəog 13 t'iəog 14 d'iəog 15  
 siəog 16 sízəog 17 nízəog 18 lízəog 19 nízəog<sup>1)</sup> 20  
 tsízəog 21 ts'iəog 22 dz'iəog 23 dzízəog 24  
 siəog 25 piəog 26 b'iəog 27 b'iəog, b'iəu 28  
 miəog; 29 b'iəog 30 miəog; 31 kog 32 k'og  
 33 xog 34 g'og 35 log 36 tog 37 t'og  
 38 d'og 39 tsog 40 ts'og 41 dz'og 42 sog  
 43 pog 44 mok'; 45 kák' 46 klák' 47  
 nág 48 pág 49 p'ág 50 mág; 51 g'iág<sup>1)</sup>  
 52 diág 53 tsíág; 54 gliág 55 tiág 56  
 d'iág 57 siág; [58 p'iəu 59 ts'iəu 60 t'iəog  
 61 g'iəog 62 kiwəg 63 dz'iəp 64 dz'iəog  
 65 d'ong].

## VI

26 藻潦 40 捎小小標 48 暴笑教悼 51 夭勞 87 施郊 87 教郊驕鑣朝勞 101  
 勞朝暴笑悼 104 刀朝 108 桃瑤 112 苗搖 132 消廬喬遙 139 漂要 155 倒召 158 驕  
 切 167 桃散謠騎 173 苗勞郊號 192 鑣驕 211 巢苔切 212 照媒紹媒 216 遙朝切  
 216 齒曉悼 218 飄螺弔 225 苗青勞 247 萬昭招 265 郊施施 290 苗翼施教  
 294 啟勞騎 300 苗朝遙 325 勞器 343 盜暴 352 萬勞 362 號勞 376 刀毛臂 394 驕教  
 401 藻鑄 406 教敘 407 漵消驕 415 苗青勞 422 高勞朝 446 煉勞 504 倦寃笑冕  
 苗廉 620 藻躋昭笑教。  
 1 齒 2 教罵 啟 3 萬 4 號鑄 5 勞潦 6 刀切倒 7 悼 8 桃盜 9 藻 10 樂  
 11 暴 12 毛施 13 驕鵠躋 14 喬 15 夭 16 要 17 瑤搖遙謠 18 曰曉 19 朝召施  
 昭照 21 紹 22 少 23 莞 24 煉 25 捎 26 小 27 笑 28 鑣廉 29 漂票 30 樂飄漁 31  
 苗 32 郊教 33 敘 34 駕 35 巢 36 脖僚 37 冂 38 桃 39 苗 40 消

<sup>1)</sup> For shie sheng, reasons some Arch. initial consonant group may be suspected in 19 and 51.

1 kāu 2 ngāu 3 chāu 4 yāu 5 lāu 6 tāu  
 7 d'āu 8 d'āu 9 tsāu 10 ts'āu 11 b'āu  
 12 māu; 13 kiāu 14 g'īāu 15 ·īāu 16  
 ·īāu 17 īāu 18 īāu 19 t'īāu 20 tsīāu 21  
 īāu 22 sīāu 23 nīāu 24 liāu 25 ts'īāu  
 26 siāu 27 siāu 28 piāu 29 p'īāu 30  
 b'īāu 31 miāu; 32 kau 33 ngau 34 yau  
 35 dz'au; 36 lieu 37 tieu 38 t'ieu 39  
 d'ieu 40 sieu.

1 kog 2 ngog 3 xog 4 g'og 5 log 6 tog  
 7 d'ok' 8 d'og 9 tsog 10 ts'og 11 b'ok'  
 12 mog; 13 kiāg 14 g'īāg 15 ·īāg' 16  
 ·īāg 17 dīāg 18 dīāk' 19 tīāg 20 t'īāg  
 21 d'īāg 22 sīāg 23 nīāg 24 liāg 25  
 ts'īāg 26 siāg 27 siāk' 28 piāg 29 p'īāg  
 30 b'īāg 31 miāg; 32 kāg 33 ngāg  
 34 g'āg 35 dz'āg; 36 liāg 37 tiāg 38  
 t'īāg 39 d'īāg 40 siāg.

## VII

舟 114 陶 翻 教 161 治 優 教 212 交 傷 約 情 233 葫 蝶 235 謂 翹 翹 振 嚴 279 謂  
 約 好 388 脫 柔 教 求 407 浮 流 髮 448 廟 保 489 舟 瑞 刀 518 酒 紹 587 造 疾 疗  
 孝 606 約 趙 莫 朽 茂 607 脫 柔 教 休。  
 1 約 2 求 脫 3 休 朽 4 髮 5 舟 6 瑞 7 柔 8 流 9 酒 10 浮 11 犬 12 約 13  
 孝 14 好 15 治 16 翹 17 造 18 保 19 陶 20 廟 21 莫 22 蝶 23 翹 24 教 25 刀 26 髮  
 27 孝 28 翹 29 葫 30 振 31 振 32 紹 33 情 34 優 35 廟 36 交 37 嚴 38 優 39 趙  
 40 疾

Words belonging to category V above:

1 kiāu, g'īāu 2 g'īāu 3 chāu 4 ·īāu 5  
 tsīāu 6 sīāu 7 nīāu 8 liāu 9 tsīāu 10  
 b'īāu 11 māu; 12 kāu 13 k'āu 14 chāu  
 15 t'āu 16 d'āu 17 dz'āu 18 pāu;  
 19 īāu 20 dz'īāu; 21 lieu 22 d'ieu  
 23 sieu.

1 kīog, g'īāg 2 g'īog 3 chīog 4 ·īog 5  
 t'īog 6 d'īog 7 nīog, 8 liog 9 tsīog 10  
 b'īog 11 miog; 12 kog 13 k'og 14 xog  
 15 t'og 16 d'og 17 dz'og 18 pog; 19  
 dīāg 20 dz'īāg; 21 gliāg 22 d'īāg 23  
 siāg.

Words belonging to category VI above:

24 ngāu 25 tāu 26 māu; 27 chāu; 28  
 g'īāu 29 ·īāu 30 īāu 31 tsīāu 32 sīāu  
 33 ts'īāu 34 piāu 35 miāu; 36 kieu 37  
 chieu 38 lieu 39 d'ieu; [40 kiāu].

24 ngog 25 tog 26 mog; 27 chāg; 28  
 g'īāg 29 ·īāg 30 dīāg 31 t'īāg 32 d'īāg  
 33 ts'īāg 34 piāg 35 miāg; 36 kiāg 37  
 chīāg 38 liāg 39 d'īāg; [40 kiāg].

## VIII

23 中宮 23 僮公 28 塉訟從 32 東公同 36 穂雞 37 蓬雞 50 舳中 61 戎東同  
 131 控送 157 廉從 233 同功從公 233 同公 238 東潔 290 攻同龐東 314 傷訟 333 從  
 用邛 343 共邛 356 東空 363 雜重 456 衡墉 458 從錦鐘應 464 功崇豐 472 懈峰 478  
 融終 583 工公 586 雜容。

24 蟲螽仲降 29 縫總公 50 仲宋仲 59 冬窮 79 莖東庸中宮 106 東蓬容 110  
 置腐凶聰 142 半巷送 189 莖東從 195 中駒 233 沖陰 263 務戎 265 蟲螽仲降仲  
 戌 275 濟沖雞同 284 頸公 293 同從 299 駒饗 314 銅訟邦 383 同邦 404 蓬邦同從  
 446 中降 448 公侗邦 450 恭邦共 458 鐘應逢(卦)公 464 離東 481 濟宗降崇 534 蟲  
 宮宗臨躬 540 邦功 541 邦腐 567 許共邦 567 中弘躬 573 邦功 573 崇皇 590 雜公  
 621 訟功 630 公東庸 630 蒙東邦同從功 643 共厖龍勇動竦絕。

1 公工功攻 2 空控 3 許 4 濟 5 麻 6 東 7 桶 8 同動儻 9 縫雞 10 聰  
 11 濟 12 送 13 峰 14 蓬逢 15 蒙潔懷 16 宮躬 17 穷 18 舂虫 19 中 20 仲 21 蟲仲  
 沖 22 蟲終 23 崇 24 戌 25 豐 26 冬 27 宗 28 宋 29 恭共 30 邦 31 頸 32 離訟 33  
 雜雞饗 34 用勇腐傷墉容 35 重 36 鐘 37 置衡 38 穂 39 龍 40 木從 41 從 42  
 訟訟 43 嫵 44 莖 45 半 46 縫 47 降巷 48 邦 49 許 50 邦 51 駒 52 離陰 53 務 54 離  
 55 弘 56 皇

1 *kung* 2 *k'ung* 3 *yung* 4 *nung* 5 *lung*  
 6 *tung* 7 *t'ung* 8 *d'ung* 9 *tsung* 10 *ts'ung*  
 11 *dz'ung* 12 *sung* 13 *pung* 14 *b'ung*  
 15 *mung*; 16 *kiung* 17 *g'itung* 18 *itung*  
 19 *t'itung* 20 *t'itung* 21 *d'itung* 22 *tsitung*  
 23 *dz'itung* 24 *nitung* 25 *p'itung*; 26  
*tuong* 27 *tsuong* 28 *suong*; 29 *kiwong*  
 30 *g'iwong* 31 *ngiwong* 32 *xiwong* 33  
*·iwong* 34 *·iwong* 35 *d'iwong* 36 *tsiwong*  
 37 *ts'iwong* 38 *n'iwong* 39 *liwong* 40  
*ts'iwong* 41 *dz'iwong*, *tsiwong* (in 157)  
 42 *ziwong* 43 *siwong* 44 *piwong* 45  
*p'iwong* 46 *b'iwong*; 47 *yàng* 48 *pàng*  
 49 *p'àng* 50 *màng*; [51 *ts'äm* 52 *·äm*  
 53 *miu* 54 *liäm* 55 *ywäng* 56 *gwång*].

1 *kong* 2 *k'ong* 3 *g'ong* 4 *nong* 5 *long*  
 6 *tong* 7 *t'ong* 8 *d'ong* 9 *tsong* 10 *ts'ong*  
 11 *dz'ong* 12 *song* 13 *pong* 14 *b'ong* 15  
*mong*; 16 *kióng* 17 *g'iong* 18 *d'iong* 19  
*tióng* 20 *t'iong* 21 *d'iong* 22 *t'iong* 23  
*dz'iong* 24 *n'iong* 25 *p'iong*; 26 *tuong*  
 27 *tsuong* 28 *suong*; 29 *kiwong* 30  
*g'iwong* 31 *ngiwong* 32 *xiwong* 33  
*·iwong* 34 *·iwong* 35 *d'iwong* 36 *tsiwong*  
 37 *ts'iwong* 38 *n'iwong* 39 *liwong* 40  
*ts'iwong* 41 *dz'iwong*, *tsiwong* (in 157)  
 42 *dz'iwong*<sup>1)</sup> 43 *siwong* 44 *piwong* 45  
*p'iwong* 46 *b'iwong*; 47 *g'ång* 48 *pång*  
 49 *p'ång* 50 *mång*; [51 *ts'äm* 52 *·äm* 53  
*miuk'* 54 *liäm* 55 *gwång* 56 *gwång*].

<sup>1)</sup> For *shie sheng*, reasons some Arch. initial consonant group may be suspected in 42 b.

## IX

185 六燠 233 莫蔽 233 屋穀 256 谷木 303 蔡宿畜復 352 鞠畜育復腹 528 鹿穀谷  
590 肅穆。

19 角族 28 角屋獄足 35 檵鹿東玉 59 鞠覆育毒 76 束讀辱 87 祀大告 94  
陸軸宿告 157 告鞠 166 曲賈玉族 180 翁鴛 196 驅(伍)續穀革玉曲 233 穆麥 238  
蠶宿 258 穀祿足 297 穀玉 300 谷東玉 302 穀粟族 320 祿僕屋 320 屋穀祿木豕獨  
336 粟獄卜穀 359 滴穀 376 深渥足穀 413 緣翁局沐 418 束獨 472 凤育櫟 478 做  
告 478 祿僕 518 告則 528 谷穀塢 606 角續。

1 谷穀 2 屋 3 鹿祿 4 讀獨 5 族 6 檵 7 卜 8 深木沐 9 翁 鞠 10 育  
燠莫 12 育 13 蔡 14 軸 15 祀 16 佩 17 蔡 18 大陸 19 櫟 20 肅宿鳳 21 腹 22 覆  
23 復 24 穆 25 告 26 鴛 27 毒 28 僕 29 曲 30 局 31 玉 32 馬 33 蠶 34 束 35 厚 36  
綠 37 足 38 繢賈 39 粟 40 角 41 獄 42 深 43 柱 44 滴 45 驅 46 馬丘 47 麥 48 種 49  
則 50 塢。

1 *kuk* 2 *uk* 3 *luk* 4 *d'uk* 5 *dz'uk* 6 *suk*  
7 *puk* 8 *muk*; 9 *kiuk* 10 *χiuk* 11 *·iuk*  
12 *·iuk* 13 *t'·iuk* 14 *d'·iuk* 15 *tsiuk* 16  
*tsiuk* 17 *siuk* 18 *liuk* 19 *liuk* 20 *siuk*  
21 *piuk* 22 *p'·iuk* 23 *b'·iuk* 24 *miuk*; 25  
*kuok*, *kau* 26 *tuok* 27 *d'uok* 28 *b'uok*;  
29 *k'iwok* 30 *g'iwok* 31 *ngiwok* 32  
*tsiwok* 33 *siwok* 34 *siwok* 35 *niwok* 36  
*liwok* 37 *dz'iwok* 38 *ziwok* 39 *siwok*;  
40 *kak* 41 *ngak* 42 *·ak* 43 *t'ak* 44 *d'·ak*;  
[45 *k'iu* 46 *k'iu* 47 *mwek* 48 *tsiək* 49  
*tsək* 50 *ku*].

1 *kok* 2 *·ok* 3 *lok* 4 *d'ok* 5 *dz'ok* 6 *sok*  
7 *pok* 8 *mok*; 9 *kiok* 10 *χiok* 11 *·iok*  
12 *diok* 13 *t'·iok* 14 *d'·iok* 15 *t'·iok* 16  
*t'·iok* 17 *siok* 18 *liok* 19 *gliok* 20 *siok* 21  
*piok* 22 *p'·iok* 23 *b'·iok* 24 *miok*; 25  
*kuok*, *kok'* 26 *tuok* 27 *d'uok* 28 *b'uok*  
29 *k'iwok* 30 *g'iwok* 31 *ngiwok* 32  
*t'iwok* 33 *d'iwok* 34 *siwok* 35 *niwok* 36  
*liwok* 37 *dz'iwok* 38 *dziwok* 39 *siwok*;  
40 *kak* 41 *ngak* 42 *·ak* 43 *t'ak* 44 *d'·ak*;  
[45 *k'iu* 46 *k'iu* 47 *mwek* 48 *tsiək* 49  
*tsək* 50 *ku*].

## X

11 荒將 9 箕行固黃觥傷 17 廣派永方 21 方將 30 陽遑 46 方良忘 50 鐙  
兵行 53 行城 68 涼霧行 72 景姜 79 唐鄉姜 81 強良兄 83 堂京桑藏 90 蟲  
行狂 101 湯裳夾行 128 牆桑兄 131 黃襄行揚 151 明昌光 152 昌陽狼臧 153 堂  
黃英 166 方桑英行 288 鄉央衡璫皇璫 302 桑梁明兄 367 襄章箱明庚行 374  
蹠羊嘗亨將彷明皇變慶疆。

1 固 2 箕 3 鐙 4 唐堂 5 犬 6 藏 7 桑 8 雾 9 光廣 10 荒 11 黃遑 12  
姜疆 13 強 14 鄉饗 15 夹 16 陽揚 17 羊姜 18 章 19 昌 20 裳嘗 21 夾 22 傷渴  
23 涼榮 24 將 25 瑰蹠 26 牆 27 襄箱 28 筐 29 狂 30 方 31 忘 32 庚 33 行衡行  
34 畏 35 亨 36 蟲 37 眇 38 京景 39 廉 40 英 41 兄 42 洪 43 兵 44 明

1 *kâng* 2 *lâng* 3 *t'âng* 4 *d'âng* 5 *tsâng*  
 6 *dz'âng* 7 *sâng* 8 *p'âng*; 9 *kwâng* 10  
*χwâng* 11 *ywâng*; 12 *kiang* 13 *g'iang* 14  
*xiang* 15 *iang* 16 *iang* 17 *iang* 18  
*tsiang* 19 *ts'iang* 20 *ziang* 21 *siang* 22  
*siang* 23 *liang* 24 *tsiang* 25 *ts'iang* 26  
*dz'iang* 27 *siang*; 28 *k'iwang* 29 *g'iwang*  
 30 *piwang* 31 *miwang*; 32 *kong* 33  
*rvng* 34 *pvng* 35 *p'vng* 36 *mvng* 37  
*kwvng*; 38 *kivng* 39 *k'ivng* 40 *·ivng*  
 41 *χivvng* 42 *jiwvng* 43 *piwvng* 44  
*miwvng*.

## XI

1 莫蕪 60 石席 101 落若 126 莳作 130 薄鄧 102 碩獲 202 澤戰伯  
 223 機薄格 251 駱若度 262 作莫 200 变寫繹 204 澤作宅 207 薄石錯 200 薩夕客  
 307 閣橐 213 惡擇 243 作莫度獲 374 跖硠多莫客錯獲格酢 382 頃若 386 白駱  
 若 202 柏变擇 421 多酢 456 赫莫獲廊度宅 476 席酢炙膾萼 504 擇莫 518 格度  
 射 528 作蕪赫 540 伯宅 541 碩伯 552 豹伯壑籍 586 惡戰 603 桩澤 614 駱名追繹歎  
 作 621 博數逆獲 630 繹宅豹諾若 630 柏度尺寫碩变作若 633 數变客擇昔  
 作夕格。

1 閣 2 惡 3 落 4 石 5 莳 6 慕 7 諾 8 落駱 9 薄 10 鄧 11 度 12 錯  
 13 酢 14 博 15 薄 16 莫 17 廊 18 鄧 19 蕪 20 數 21 变 22 射 23  
 石 24 澤 25 若 26 跖 27 篤 28 夕 29 席 30 賦 31 蔽 32 赫 33 澤 34  
 桩 35 伯 36 白 37 莫 38 豹 39 獲 40 戰 41 給 42 碩 43 惡 44 膾

1 *kâk* 2 *k'âk* 3 *ngâk* 4 *χâk* 5 *γâk* 6  
*·âk* 7 *nâk* 8 *lâk* 9 *t'âk* 10 *d'âk* 11 *tsâk*  
 12 *ts'âk* 13 *dz'âk* 14 *pâk* 15 *p'âk* 16  
*mâk*; 17 *k'wâk* 18 *χwâk* 19 *ywâk*; 20  
*iang* 21 *tsiak* 22 *ts'iak* 23 *siak* 24 *siak*  
 (in 603) 25 *niak* 26 *ts'iak* 27 *dz'iak* 28  
*ziak* 29 *siak*; 30 *kvk* 31 *k'vk* 32 *χvk*  
 33 *d'vk* 34 *tsvk* 35 *pvk* 36 *b'vk* 37 *a*  
*mvk* (in 374) 37 *b* *mvk* 38 *yvok*; 39  
*kivk* 40 *k'ivk* 41 *ngivk*; [42 *muo'* (in  
 262) 43 *·uo'* (in 313) 44 *g'ik*].

1 *kâng* 2 *lâng* 3 *t'âng* 4 *d'âng* 5 *tsâng*  
 6 *dz'âng* 7 *sâng* 8 *p'âng*; 9 *kwâng* 10  
*χwâng* 11 *g'wâng*; 12 *kiang* 13 *g'iang*  
 14 *xiang* 15 *iang* 16 *diang* 17 *ziang*  
 18 *t'iang* 19 *t'iang* 20 *d'iang* 21 *siang*  
 22 *siang* 23 *liang* 24 *tsiang* 25 *ts'iang*  
 26 *dz'iang* 27 *siang*; 28 *k'iwang* 29  
*g'iwang* 30 *piwang* 31 *miwang*; 32  
*kong* 33 *g'vng* 34 *pvng* 35 *p'vng* 36  
*mvng* 37 *kwvng*; 38 *kivng* 39 *k'ivng*  
 40 *·ivng*; 41 *χivvng* 42 *giwvng* 43  
*miwvng*.

1 *klâk* 2 *k'lâk* 3 *ngâk* 4 *χâk* 5 *g'lâk*  
 6 *·âk* 7 *nâk* 8 *glâk* 9 *t'âk* 10 *d'âk* 11  
*tsâk* 12 *ts'âk* 13 *dz'âk* 14 *pâk* 15 *p'âk*  
 16 *mâk*; 17 *k'wâk* 18 *χwâk* 19 *g'wâk*;  
 20 *diak* 21 *t'ik* 22 *t'ik* 23 *d'ik* 24  
*siak* (in 603) 25 *niak* 26 *ts'ik* 27  
*dz'ik* 28 *dziak* 29 *siak*; 30 *klvk* 31  
*k'lvk* 32 *χvk* 33 *d'vk* 34 *tsvk* 35 *pvk* 36  
*b'vk* 37 *a* *mvk* (in 374) 37 *b* *mvk* 38  
*g'vok*; 39 *kivk* 40 *k'ivk* 41 *ngivk*; [42  
*mo<sub>k</sub>*, dial. *mâk'* (in 262), 43 *·o<sub>k</sub>*, dial.  
*·âk'* (in 313) 44 *g'ik*].

## XII

5 笔(鉛)樂 59 情售售 62 篓 翩 翱 63 緜較謹虞 118 侈厭汎 132 軸陶抽(抽)好  
 149 級謹藥 178 皓緝(緝)鵠 窭 178 豪緝沃樂 202 機駁樂 271 罩樂 330 沼樂 姬(姬)  
 虞散 366 奥蹙菽夙覆 400 的爵 407 木附歛屬 415 沃樂 458 灌鬻(自高確)沼蹠  
 464 欲孝 504 虞謹蹠(蟠矢爵)菴 烘藥 518 昭樂 漸貌數虐毫 528 迪復毒 528 削爵  
 灌溺 541 貌蹠灌 552 到樂。

1 樂 2 敷 3 緜 4 蹠 5 虞 6 謹 7 藥 8 烘 篓 9 緜 烘 10 爵 11 削 12 涼 13  
 機 14 的 15 翩 16 嵩 17 較 18 翱 19 窭 20 灌 21 駁 22 貌 23 烘 24 離 25 沃 26 奎  
 26 欲 27 屬 28 木 29 情 30 奥 31 軸 32 淵菽 33 夷 34 宿 35 覆 36 復 37 皓 38 好  
 39 白高 40 到 41 抽 42 陶 43 漸 44 笔 45 珣 46 數 47 孝 48 敷 49 罩 50 菴 51 沼 52  
 52 歛 53 窪 54 歛 55 抽 56 情售 57 侈 58 緝 59 附

1 *lāk* 2 *tsāk* 3 *pāk<sup>1</sup>*; 4 *g'jāk* 5 *ngiāk*  
 6 *χiāk* 7 *żiāk* 8 *żiāk* 9 *tsiāk* 10 *tsiāk*  
 11 *siāk*; 12 *niek* 13 *liek* 14 *tiek* 15  
*d'iek* 16 *ts'iek*; 17 *kāk* 18 *yāk* 19 *d'āk*  
 20 *pāk* 21 *māk*; 22 *χuok* 23 *yuok* 24  
*uok* 25 *d'uok*; 26 *żiwok* 27 *żi'wok*; 28  
*muk* 29 *χiuk* 30 *żiuk* 31 *d'żiuk* 32  
*żiuk* 33 *ts'żiuk* 34 *siuk* 35 *p'żiuk* 36  
*b'żiuk*; 37 *kāu* 38 *χāu* 39 *yāu* 40 *tāu*  
 41 *t'āu* 42 *d'āu* 43 *ts'āu* 44 *māu* 45  
*māu*; 46 *kau* 47 *χau* 48 *ngau* 49 *t'au*;  
 50 *kiāu* 51 *tsiāu*; 52 *sieu*; 53 *żiżu* 54  
*żiżu* 55 *t'żiżu* 56 *żiżu* 57 *siżu* 58 *siżu*;  
 [59 *b'żiżu*].

1 *glāk* 2 *tsāk* 3 *pāk*; 4 *g'jāk* 5 *ngiāk*  
 6 *χiāk* 7 *giāk* 8 *dīāk* 9 *t'jāk* 10 *tsiāk*  
 11 *siāk*; 12 *niāk* 13 *liāk* 14 *tiāk* 15  
*d'iāk* 16 *ts'iāk*; 17 *kāk* 18 *g'āk* 19 *d'āk*  
 20 *pāk* 21 *māk*; 22 *χuok*, 23 *g'uok*  
 24 *uok* 25 *d'uok*; 26 *giwok* 27 *d'żi'wok*;  
 28 *mok* 29 *χiok* 30 *żiok* 31 *d'żiok* 32  
*d'żiok* 33 *ts'żiok* 34 *siok* 35 *p'żiok* 36  
*b'żiok*; 37 *kog* 38 *χog* 39 *g'og* 40 *to<sub>k</sub>* 41  
*t'og* 42 *d'og* 43 *ts'og* 44 *mok'* 45 *mog*;  
 46 *kāg* 47 *χāg* 48 *ngāg* 49 *t'āg*; 50  
*kiāg* 51 *t'żiāg*; 52 *siāk*; 53 *żiog* 54  
*żiog* 55 *t'żiog* 56 *d'żiog* 57 *siog* 58 *siok*:  
 [59 *b'żiżu*].

<sup>1)</sup> For 3, I should have expected *Ts'ie yün pāk*, like 20, not *pāk*. I cannot account for this difference.

## XIII

9 砥唐师吁 14 置夫 17 楚馬 21 居御 26 箕釜 26 下女 30 下處 36 華車 37  
 菲祀虞 44 羽野雨 50 處馬下 51 下苦 53 羽阻 59 內怒 62 舞處 63 促(危)舞  
 處組 68 牝且 85 雨母 108 瓜琚 116 楚甫 120 濟父顧 129 野馬武 131 馬組舞  
 虎所女 137 車華琚都 138 蘇華都且 147 閣茶且蘆娛 153 著素華 159 鱷雨 168  
 岳父 181 楚戶者 182 杜滑鷄父 184 羽桐鹽黍怙所 187 楚野處 189 苦下與 206  
 鼓下夏羽 207 桐下 221 羽隻處 223 股羽野宇戶下鼠戶處 223 瓜壺苴樗夫  
 223 圍稼 235 捩茶租瘡家 238 宇戶 238 羽馬 242 胡腐瑕 249 馬鹽處 249 下桐鹽  
 夫 251 華夫 253 家詔固乎 256 許孽父顧 256 滑姑鼓舞暇 262 家故居 262 華  
 車 265 華塗居書 293 午馬寢所 294 羽野寡 297 野渚 299 牙居 302 桐黍處父 302  
 檉故居 320 雨輔予 325 伎夫馬處 329 部家 336 尾寡 347 舍車日 349 者虎 350  
 雨女予 359 夏暑予 362 下土 366 土野暑苦雨宮 376 廬瓜菹 379 鼓祖雨黍女  
 379 棕庚 388 尾羽胥祐 394 女舞 400 鼓奏祖 404 箕予馬崩 404 股下紓予 411 餘  
 旗日于 413 鱷與者 425 虎野暇 432 爭祖 436 旅野女 442 父馬許下女宇 443 徒家 456  
 怒旅祐下 460 許武祐 476 御穿 481 滯處滑肺下 489 野處旅詣 495 車馬 528 宇  
 怒處圉 541 馬土 542 若賦 545 下甫 545 茹吐甫寡禦 552 土訏甫嘆虎 559 祖父  
 559 父旅浦土處緒 559 武怒、虎虜浦所 588 聲虞羽鼓圉奏舉 592 祐胡瑕 594 馬  
 旅 614 駁魚怯邪徂 615 下舞 620 武祖祐 630 武緒野宸女旅父魯宇輔 630 故  
 爭許字 647 武楚阻旅所緒<sup>1</sup>。

1 家稼葭瑕瑕岸 2 牙仰 3 下夏暇駁 4 野 5 邪 6 犯 7 馬 8 者 9 舍  
 10 若 11 置 12 邪 13 瓜寡 14 華 15 顧鹽鼓醫股故罟 16 苦 17 牛 18 虎濟 19  
 許 20 戶尾乎壺姑怙胡祐祐 21 恃帑 22 壴魯 23 鄭閭 24 土吐 25 杜茶瘡  
 圖塗徒 26 組組祖 27 且 28 徂 29 蘇素 30 圍 31 浦病 32 居琚據車舉 33 箕  
 34 瓢 35 魚語圉禦 36 許 37 予餘 38 與旗 39 檠 40 著孽 41 阻菹 42 楚 43 濟  
 44 處 45 所 46 泰鼠書紓 47 女茹 48 女 49 旅蘆廬 50 且 51 直俎 52 著虞緒  
 53 脣滑 54 跡 55 虞侯娛虞嘆 56 相盱訂吁昇 57 羽字 58 雨 59 灰 60 天甫  
 肩輔浦崩崩父賦 61 父 62 金 63 爰武 64 母 65 爻 66 𧆑

1 *ka* 2 *a* *nga* 2 *b* *nga* (in 21), *ngiwo*  
 3 *ya* 4 *ia* 5 *ia* (in 68) 6 *pa* 7 *ma* 8 *tsia*  
 9 *siā* 10 *ńz̥ia* 11 *tsiā* 12 *zia* (in 614); 13  
*kwa* 14 *ywa*; 15 *kuo* 16 *k'uo* 17 *nguo*  
 18 *χuo* 19 *χuo* (in 256) 20 *yuuo* 21 *nuo*  
 22 *luo* 23 *tuo* 24 *t'uo* 25 *d'uo* 26 *tsuo* 27  
*dz'uo* (in 147) 28 *dz'uo* 29 *suo* 30 *puo*  
 31 *p'uo*; 32 *kiwo* 33 *kiwo* 34 *g'íwo* 35  
*ngiwo* 36 *χiwo* 37 *íwo* 38 *íwo* 39 *t'íwo* 44  
 40 *d'íwo* 41 *tsíwo* 42 *ts'íwo* 43 *tsíwo* 44

1 *ka* 2 *a* *ngá* 2 *b* *ngá* (in 21) *ngiō* 3  
*g'á* 4 *diá* 5 *ziá* 6 *pá* 7 *má* 8 *t'íá* 9 *siá*  
 10 *ńjá* 11 *tsiá* 12 *dzjá* (in 614); 13  
*kwá* 14 *g'wá*; 15 *ko* 16 *k'o* 17 *ngó* 18 *χo*  
 19 *χo* (in 256) 20 *g'o* 21 *no* 22 *lo* 23 *to*  
 24 *t'o* 25 *d'o* 26 *tso* 27 *dz'o* (in 147) 28  
*dz'o* 29 *so* 30 *po* 31 *p'o*; 32 *kiō* 33 *kliō*  
 34 *g'io* 35 *ngiō* 36 *χio* 37 *dio* 38 *zio* 39  
*l'io* 40 *d'io* 41 *tsio* 42 *ts'io* 43 *t'io* 44  
*t'io* 45 *siō* 46 *śio* 47 *ńio* 48 *nio* 49 *liō*

*ts'íwo* 45 *siwo* 46 *śíwo* 47 *néíwo* 48  
*níwo* 49 *liwo* 50 *tsíwo* 51 *ts'íwo* 52  
*ziwo* 53 *siwo*; 54 *kiu* 55 *ngiu* 56 *χiu*  
 57 *jiu* 58 *jiu* 59 *ju* 60 *piu* 61 *b'iu* (in  
 120, 168, 249, 256, 302, 630) 62 *b'iu*  
 63 *miu*; (64 *məu* 65 *tsəu* 66 *k'íwo*).

50 *tsio* 51 *ts'io* 52 *dzio* 53 *sio*; 54 *kiwo*  
 55 *ngiwo* 56 *χiwo* 57 *giwo* 58 *ziwo* 59  
*diwo* 60 *piwo* 61 *b'íwo* (in 120, 168,  
 249, 256, 302, 630) 62 *b'íwo* 63 *miwo*;  
 [64 *mug* 65 *tsu* 66 *k'íwo*].

XIV

28 露夜 40 茹據翫怒 59 改露 131 射御 134 路祛故 155 國瞿夜莫 166 淑莫度  
 路 175 莫除居瞿 182 祜居故 187 夜居 208 國除庶 276 滑寫語處 284 茹稊 307 除  
 去芋(陶) 326 居夫夜夕惡 366 除莫庶暇顧怒 374 庶度 385 滑寫處 394 聲射 394  
 滑寫 456 樞柘路固 472 去呱許路 510 呼夜 518 度虞 535 去故莫虞怒 586 夜譽。  
 1 故國呱顧 2 嘘 3 呼 4 怒 5 國 6 居 7 樞 8 御語 9 聲 10 除 11 處 12  
 茹 13 滑 14 瞿 15 虞 16 芋 17 夫 18 稊 19 惡 20 路 21 露 22 庶 23 度 24  
 莫 25 據 26 去 27 夜 28 柘 29 射 30 窩 31 暇

1 *kuo* 2 *χuo<sup>1</sup>* 3 *χuo* 4 *nuo* 5 *puo*; 6  
*kiwo* 7 *k'íwo* 8 *ngiwo* 9 *íwo* 10 *d'íwo*  
 11 *ts'íwo* 12 *néíwo* 13 *siwo*; 14 *kiu* 15  
*ngiu* 16 *χiu* 17 *piu* 18 *ρuo* 19 *uo* 20  
*luo* 21 *śíwo* 22 *d'uo* 23 *suo* 24 *muo*; 25  
*kiwo* 26 *k'íwo*; 27 *ia* 28 *d'íia* 29 *śia*;  
 [30 *ziāk* 31 *ya*].

1 a, b, d *ko* 1 c *kuo* 2 *χwo<sup>1</sup>* 3 *χo* 4 *no*  
 5 *po*; 6 *kiø* 7 *k'íø* 8 *ngiø* 9 *zio* 10 *d'íø*  
 11 *t'íø* 12 *níø* 13 *sio*; 14 *kiwo* 15 *ngiwo*  
 16 *χiwo* 17 *piwo*; 18 *g'wo<sub>k</sub>* 19 *o<sub>k</sub>* 20  
*lo<sub>k</sub>* 21 *śiwo<sub>k</sub>* 22 *d'o<sub>k</sub>* 23 *so<sub>k</sub>* 24 *mo<sub>k</sub>*  
 25 *kiø<sub>k</sub>* 26 *k'íø<sub>k</sub>* (< *k'íop*); 27 a *zio<sub>k</sub>* 27 b  
*dio<sub>k</sub>* 28 *d'íø<sub>k</sub>* 29 *śiø<sub>k</sub>*<sup>2</sup>); [30 *dziak* 31  
*g'ád*].

XV

17 蓋駒 50 苛後 60 妒隔跛(躡) 90 驅候淪(倫) 177 樞榆實驅  
 淪(倫) 181 爰隔近駒株 223 味媾 251 駒鴻諺 283 豆食(餌) 具孺 273 柴榦耆後 310  
 飯具 320 痛後口金侮 340 苛後 343 樹數口厚 374 奏祿 407 俗痛 407 駒後餌(餌)  
 取 420 踏趨 442 附後奏侮 456 福附侮 476 苛候樹侮 476 主鬻斗耆 495 厚主 504  
 淪驅 518 踏(偶)愚 518 漏覩 590 后後。

1 苛媾耆句覩 2 口 3 偶 4 侯飯後厚近 5 樞 6 漏 7 斗味 8 偷 9 豆  
 10 奏 11 駒杓 12 驅 13 具 14 隔遇 15 餌 16 柴 17 淪榆倫痛愈 18 株 19 踏 20  
 爰 21 主 22 妒 23 爰樹 24 數 25 滉孺西覩 26 葦叟 27 諺 28 取趨 29 附 30 侮 31  
 跋 32 飲 33 飲 34 祿 35 俗 36 福

<sup>1)</sup> For *shie sheng* reasons an Arch. initial consonant group may be suspected in char. 2.

<sup>2)</sup> A parallel dialect had the values: 18 *g'wák* 19 *ák* 20 *lák* 21 *śíwák* 22 *d'ák* 23 *sák* 24  
*mák* 25 *kiák* 27 a *ziák* 27 b *diák* 28 *d'íák* 29 *śiák*.

1 *k<sup>2</sup>u* 2 *k'<sup>2</sup>u* 3 *ng<sup>2</sup>u* 4 *γ<sup>2</sup>u* 5 *·<sup>2</sup>u* 6 *l<sup>2</sup>u*  
 7 *t<sup>2</sup>u* 8 *t'<sup>2</sup>u* 9 *d<sup>2</sup>u* 10 *ts<sup>2</sup>u*; 11 *k<sup>1</sup>u* 12  
*k'<sup>1</sup>u* 13 *g<sup>1</sup>u* 14 *ng<sup>1</sup>u* 15 *·<sup>1</sup>u* 16 *iu* 17 *iu*  
 18 *t'<sup>1</sup>u* 19 *d'<sup>1</sup>u* 20 *ts'<sup>1</sup>u* 21 *ts<sup>1</sup>u* 22 *ts'<sup>1</sup>u*  
 23 *z<sup>1</sup>u* 24 *ʂ<sup>1</sup>u* 25 *n<sup>1</sup>u* 26 *l<sup>1</sup>u* 27 *ts<sup>1</sup>u* 28  
*ts'<sup>1</sup>u* 29 *b<sup>1</sup>u* 30 *m<sup>1</sup>u*; [31 *d'<sup>1</sup>wo* 32, 33  
*·<sup>1</sup>wo* 34 *luk* 35 *iu* 36 *ma*].

1 *ku* 2 *k'<sup>1</sup>u* 3 *ngu* 4 *g<sup>1</sup>u* 5 *·<sup>1</sup>u* 6 *lu* 7 *tu*  
 8 *t<sup>1</sup>u* 9 *d<sup>1</sup>u* 10 *tsu*; 11 *k<sup>1</sup>u* 12 *k'<sup>1</sup>u* 13  
*g<sup>1</sup>u* 14 *ngiu* 15 *·<sup>1</sup>iu* 16, 17 *diu* 18 *tiu*  
 19 *d'<sup>1</sup>iu* 20 *ts'<sup>1</sup>iu* 21 *t<sup>1</sup>iu* 22 *t'<sup>1</sup>iu* 23 *d'<sup>1</sup>iu*  
 24 *ʂiu* 25 *n<sup>1</sup>iu* 26 *gliu* 27 *tsiu* 28 *ts'<sup>1</sup>iu*  
 29 *b<sup>1</sup>iu* 30 *m<sup>1</sup>iu*; [31 *d'<sup>1</sup>io* 32, 33 *·<sup>1</sup>ok*  
 34 *lok* 35 *giu<sup>1</sup>* 36 *ma*].

## XVI

31 三今 42 風心 44 音南心 101 莺耽 202 風林欽 214 林南 247 莺琴湛心 253 琴  
 湛 342 風南心 368 欽琴音南僊 400 林湛 438 林興心 448 音南 510 謹終 518 僊心  
 528 林譜 621 心南 195 合軼內色 253 合翁 436 集合 504 軒洽。

1 南 2 耽湛 3 三 4 今 5 欽 6 莺琴 7 音 8 譜 9 僊 10 莺謹 11 林 12 心、  
 13 風 14 合 15 軼 16 洽 17 翁 18 色 19 集輯 20 航 21 終

1 *n<sup>2</sup>m* 2 *t<sup>2</sup>m* 3 *s<sup>2</sup>m*; 4 *k<sup>2</sup>m* 5 *k'<sup>2</sup>m*  
 6 *g<sup>2</sup>m* 7 *·<sup>2</sup>m* 8 *ts<sup>2</sup>m* 9 *ts'<sup>2</sup>m* 10 *ś<sup>2</sup>m*  
 11 *l<sup>2</sup>m* 12 *s<sup>2</sup>m*; 13 *p<sup>2</sup>ung*; 14 *g<sup>2</sup>ap*  
 15 *n<sup>2</sup>ap*; 16 *g<sup>2</sup>ap*; 17 *χ<sup>2</sup>ap* 18 *·<sup>2</sup>ap* 19  
*dz'<sup>2</sup>ap*; [20 *χ<sup>2</sup>eng* 21 *ts<sup>2</sup>ung*].

1 *nəm* 2 *təm* 3 *səm*; 4 *kəm* 5 *k'<sub>1</sub>m*  
 6 *g'<sub>1</sub>m* 7 *·<sub>1</sub>m* 8 *ts<sub>1</sub>m* 9 *ts'<sub>1</sub>m* 10 *d'<sub>1</sub>m*  
 11 *l<sub>1</sub>m* 12 *s<sub>1</sub>m*; 13 *p<sub>1</sub>um*; 14 *g<sub>1</sub>ap* 15  
*n<sub>1</sub>ap*; 16 *g<sub>1</sub>ap*; 17 *χ<sub>1</sub>ap* 18 *·<sub>1</sub>ap* 19 *dz'<sub>1</sub>ap*;  
 [20 *χ<sub>1</sub>eng* 21 *t<sub>1</sub>ong*].

\* \* \*

By our investigation we have confirmed Simon's theories of Arch. guttural finals in certain large and important Ts'ie yün rimes: *-di* (咍), *-i* (之), *-iu* (partially: type 母 only), *-i<sup>2</sup>u*, *-āu*, *-au*, *-iāu*, *-ieu*. On the other hand we have found open Arch. syllable in other equally large and important groups in which he had reconstructed a *-y<sup>2</sup>:* *-a* and *-ia* (types 賴, 者), *-uo<sup>1</sup>*, *-iwo<sup>1</sup>*, *-iu<sup>1</sup>*, *-u<sup>1</sup>* (except type 母), *-ā*, *-iā* (< *ia*).

It is now of a considerable interest to study the fate of these final gutturals in later epochs, notably in the Han era. There is a difficulty arising from the fact that the poets were often conservative in their rime system, influenced by the Shī king rimes. It is only occasionally that the living language of their time peeps through. But there is one long poem, the most extensive versified work of the Han epoch, as far as I am aware, which suits our purpose admirably, since it is a work free from literary pretensions, with a free and popular poetical style (*yao*) and with a rime system that is completely emancipated from every Shī king

<sup>1)</sup> But for some falling ju sheng: 惡 *·uo* (< *.ok* (< *āk*)), 裕 *iu* (< *giuk* etc.

influence, a highly vulgar and careless, but for that very reason extremely instructive, rime system: the **易林** Yi lin.

The age and origin of this work will be discussed in an appendix below; here I simply state that it was, in all likelihood, a work by Ts'uei Chuan, written in Wang Mang's time (first decades of our era).

The Yi lin consists of 4096 stanzas, mostly of four lines each. Some of them, however, are mere repetitions of earlier stanzas, so that the real number is something like 4000 — a very extensive rime material. This wealth of material in a work written by one man is extremely valuable owing to the fact that rimes which at first seem impossible and appear to be due to some error (or indeed not to be meant to rime) by their frequent reoccurrence prove themselves to be perfectly regular and demand a phonetic interpretation. The best edition of the Yi lin is that of Huang P'ei-lie in the *Shi li kù ts'ung shu*. The work is divided into 64 sections according to the 64 hexagrams of the Yi king, and each section is subdivided into 64 stanzas. I indicate a quoted stanza by these figures, e. g. 35:12 = the 12th stanza of the 35th section.

When utilizing the rimes of the Yi lin for linguistic purposes, we shall have to be very cautious. When the lines of a stanza end like this 尤: 覆: 國: 室, it is very tempting to take this as a proof that the 尤 derives from a form with final guttural. But this would be a rash conclusion. There are various rime patterns in the stanzas of the Yi lin, and we must first examine the principal ones. I insert here a few examples of the line terminations:

1 山泉乾言 2 裳與生仁 3 阪臺聲通 4 道垣安寧 5 生成惠寧  
6 大閭陽歎 7 賦充常得 8 年生乏靈 9 諸指閭坐售害。

These occur: 1 in 1:6; 2 in 1:27; 3 in 1:1; 4 in 2:54; 5 in 1:14; 6 in 1:37; 7 in 3:60; 8 in 5:1; 9 in 9:42.

The first eight stanzas exemplify the following types:

- 1 type a : a : a : a ;
- 2 type a : a : a : b ;
- 3 type a : a : b : b ;
- 4 type a : b : b : b ;
- 5 type a : a : b : a ;
- 6 type a : b : a : b ;
- 7 type a : b : b : a ;
- 8 type a : b : c : b .

Out of these, the 5th type: a : a : b : a, is by far the most common, in fact the pattern of at least three fourths of the 4096 stanzas; where there is uncertainty as to which pattern is intended, there is therefore a presumption in favour of this type. It should not be overlooked, however, that sometimes, though rarely, there are unrimed stanzas; example 9 of the table is a specimen of this.

It is obvious that many stanzas do not allow of any linguistic conclusions at all. The example chosen above: 尤: 覆: 國: 室 might seem to speak in favour of a final guttural in 尤, but the pattern here might be a : b : b : b, so no safe conclusion can be drawn. In a great number of cases, however, absolutely safe results can be obtained, particularly in stanzas of the type a : a : b : b. In a case like 4:38: 跌: 崇: 明: 藏 the two first words *must* rime, and we must get at the final consonant (-t') in the second word. I wish to emphasize, however, that rather than be bold and thereby arrive at some solution or other of various linguistic questions, I have preferred to be extremely cautious and to build only on such stanzas as I consider to be entirely unambiguous as to their rimes.

If you read the Yi lin, you first get the impression that there is complete anarchy in regard to the rimes, that everything rimes with everything. But that is far from the truth: there is method in the madness. I shall give here a table of certain rime categories which are of interest for our present investigation:

## I

1 登公 2 通傷 3 棘足客毒 4 德逆足 5 亨明功 6 鄉中 7 昌隆 8 簡功 9 伏匿息 10 集答國 11 極飾鑰出 12 玉得力疾 13 危合 14 實賊室 15 食入 16 輢匿室 17 實集福。

## II

1 折罰葬 2 跌崇 3 積食 4 貸得 5 達外 6 至疊 7 悅樂 8 敗寶 9 退吉 10 寶制 11 絶敗 12 殤訣 13 月忤 14 會外訣 15 路得 16 隆室 17 會達 18 列廢 19 折至 20 敝缺 21 潛折快 22 淪漬室 23 故到哭 24 欲度 25 類孽 26 墓屋 27 載得 28 至恤 29 出崇憤 30 類室 31 貸得 32 屈類 33 蓋路 34 出位 35 蓋得 36 決崇。

## III

1 得子 2 得喜 3 已擊 4 北思 5 殖祉 6 起息 7 喜極 8 止曲 9 在福 10 蓋時 11 起卓 12 食市 13 軸期 14 時力 15 喜織 16 徒得 17 國子 18 海得 19 福思 20 士喜國 21 起理穀 22 志得 23 祉欲 24 識事 25 得事 26 喜職官 27 未國子 28 紀樂 29 目耳 30 史福 31 子福 32 目喜來得 33 起國 34 海保 35 蓋炎 36 治鑿 37 國起 38 稔祀 39 船易 40 財食 41 搏事。

IV

1 寶得 2 多笑 3 曲寶 4 足飽 5 表服 6 道得 7 草睦 8 草寶 9 極飽  
10 月勝國 11 福寶 12 天寶息。

V

1 國憂 2 翁睦 3 種有 4 謀識 5 足咎 6 厄瘦 7 手毒 8 就復 9 牛蹴  
10 尤福 11 魁憂 12 薄咎。

VI

1 道祀 2 巢灰 3 妖蕪 4 里道 5 子道 6 郊之 7 朝恩 8 起草 9 期笑  
10 潛海 11 時調 12 市寶 13 約保 14 子飽 15 勿來 16 市寶信 17 抱財 18 考  
起 19 道市 20 草約。

VII

1 市友 2 婦海 3 有喜 4 鮑友 5 子母 6 海有 7 嬌謀 8 當殆 9 疑殆  
10 材時丘 11 婦喜 12 富喜 13 壴喜 14 時憂 15 媒憂 16 遊期 17 鵠姬 18  
憂災 19 殆酒 20 遊子 21 時才休 22 狩祉 23 紓子 24 獸事。

VIII

1 食舞福 2 國主 3 夫祿 4 離郭 5 珠渥 6 廟樹 7 目敷 8 酒舞福 9  
主足。

IX

1 屋居 2 兔路得 3 叔盧 4 戶足 5 居國 6 女得 7 侶屬 8 褒固 9 或  
所 10 福杵 11 捕得 12 目怒 13 塞伍 14 國居 15 苦戰 16 福處 17 盧腹 18 怒  
域 19 居得 20 所國。

X

1 蘭海 2 宇止 3 夫止 4 舞喜 5 軀治 6 里海柱 7 頤拘 8 里聚 9 父  
祀 10 驅 11 市府 12 牝災 13 樹來 14 起主 15 駒時 16 子主 17 理主亥。

XI

1 來俟 2 后海 3 海後 4 頭之 5 俟時 6 後祀 7 走喜

XII

1 海處 2 約處 3 災所 4 喜許 5 在苦 6 事居 7 恃吏 8 女子 9 在處  
10 趾居 11 除未 12 處子 13 阻殆 14 車時 15 語喜 16 幸詩 17 里許 18 時墟  
19 里處 20 治蘆 21 湖里 22 魯 23 配處 24 虛災 25 處齒 26 處喜 27 齒緒 28  
戶理 29 起苦 30 與時 31 子顧悔 32 里苦 33 佩汝 34 土喜 35 居時 36 孤喜  
37 止女 38 約所 39 苦止 40 魚財 41 恃吏 42 忌步。

## XIII

1 輔討 2 禹道 3 具取道 4 柱道 5 夫笑 6 聚聚 7 主道 8 脫誅 9 主  
飽 10 屢好。

## XIV

1 酒取 2 右聚 3 聚宇 4 俱戛 5 醜取 6 柱咎 7 主輔咎 8 就取 9 柱  
久 10 周誅 11 素佑。

## XV

1 章仇 2 盧羔 3 居倒 4 與遊 5 居朝 6 居巢 7 鋤收 8 右處 9 友舉  
10 苦戛 11 草處 12 卑居 13 虛仇 14 虛逃 15 兔留 16 教序 17 與遊 18 墟尤  
19 築道 20 寶處 21 土保 22 呼休 23 友舉 24 牛居 25 狐笑 26 居戛 27 道苦  
28 苦口 29 虛候 30 距關 31 魚詎 32 頭墟 33 後處 34 偶所 35 口怒。

## XVI

1 陽洳 2 駒居 3 乳故 4 苦主 5 駒都 6 聚除 7 處愈 8 聚處 9 陽居  
10 聚宮 11 鬼禱 12 柱苦 13 珠魚。

## XVII

1 家株 2 野母 3 否家 4 野咎 5 口下 6 野有 7 巢家 8 鳥家 9 海止  
者 10 家牛 11 家走 12 聚家 13 久野 14 謂家 15 家遊 16 後野 17 家辭 18 野  
在 19 馬保 20 下在 21 家之 22 下理 23 樹稼 24 下后。

These examples are drawn from the following stanzas:

I: 1 = 2:6, 2 = 2:14, 3 = 3:22, 4 = 4:2, 5 = 4:9, 6 = 7:21, 7 = 7:60, 8 = 9:2, 9 = 9:44, 10 = 1:29,  
11 = 2:12, 12 = 2:16, 13 = 3:5, 14 = 3:27, 15 = 3:54, 16 = 4:42, 17 = 8:7;

II: 1 = 1:34, 2 = 4:38, 3 = 4:51, 4 = 8:19, 5 = 9:38, 6 = 9:56, 7 = 9:58, 8 = 12:45, 9 = 12:12, 10 =  
13:41, 11 = 16:24, 12 = 26:21, 13 = 28:41, 14 = 29:18, 15 = 26:80, 16 = 28:55, 17 = 32:40, 18 =  
33:21, 19 = 34:36, 20 = 34:45, 21 = 34:53, 22 = 34:55, 23 = 36:26, 24 = 37:20, 25 = 37:32, 26 =  
37:56, 27 = 39:63, 28 = 42:50, 29 = 43:61, 30 = 44:61, 31 = 50:3, 32 = 53:12, 33 = 60:24, 34 =  
61:29, 35 = 63:34, 36 = 64:41.

III: 1 = 2:40, 2 = 4:24, 3 = 6:39, 4 = 7:31, 5 = 8:6, 6 = 9:47, 7 = 11:14, 8 = 12:12, 9 = 13:57,  
10 = 16:12, 11 = 16:26, 12 = 18:61, 13 = 20:10, 14 = 25:40, 15 = 27:43, 16 = 29:27, 17 = 29:41,  
18 = 30:38, 19 = 31:41, 20 = 33:36, 21 = 35:52, 22 = 36:19, 23 = 37:31, 24 = 41:27, 25 = 43:50,  
26 = 45:3, 27 = 45:25, 28 = 46:47, 29 = 47:22, 30 = 48:22, 31 = 50:13, 32 = 50:16, 33 = 50:54,  
34 = 51:7, 35 = 52:9, 36 = 53:12, 37 = 53:17, 38 = 57:40, 39 = 60:28, 40 = 60:53, 41 = 61:47.

IV: 1 = 4:19, 2 = 10:28, 3 = 13:34, 4 = 23:32, 5 = 34:19, 6 = 34:40, 7 = 36:39, 8 = 37:19, 9 =  
41:32, 10 = 42:13, 11 = 49:8, 12 = 54:32.

V: 1 = 8:3, 2 = 6:48, 3 = 8:46, 4 = 18:12, 5 = 18:20, 6 = 21:62, 7 = 25:2, 8 = 25:23, 9 = 30:18,  
10 = 36:38, 11 = 41:41, 12 = 42:24.

VI: 1 = 4:39, 2 = 5:12, 3 = 8:5, 4 = 8:39, 5 = 9:14, 6 = 10:40, 7 = 13:30, 8 = 14:7, 9 = 14:58,  
10 = 17:19, 11 = 19:21, 12 = 23:56, 13 = 26:4, 14 = 28:23, 15 = 39:37, 16 = 41:45, 17 = 42:63, 18 =  
45:48, 19 = 47:16, 20 = 59:3.

VII: 1 = 2:62, 2 = 3:39, 3 = 3:51, 4 = 5:41, 5 = 6:7, 6 = 7:24, 7 = 8:10, 8 = 8:36, 9 = 10:18, 10 =  
10:57, 11 = 12:58, 12 = 13:36, 13 = 1:64, 14 = 3:44, 15 = 4:47, 16 = 5:53, 17 = 6:38, 18 = 7:59,  
19 = 10:20, 20 = 22:40, 21 = 36:21, 22 = 44:64, 23 = 44:18, 24 = 46:17.

VIII: 1 = 6:28, 2 = 9:17, 3 = 20:32, 4 = 22:47, 5 = 26:48, 6 = 27:25, 7 = 30:41, 8 = 31:24, 9 =  
32:58.

IX: 1 = 3:23, 2 = 4:25, 3 = 5:59, 4 = 10:11, 5 = 10:24, 6 = 16:42, 7 = 17:1, 8 = 33:27, 9 = 34:6, 10 = 30:60, 11 = 31:11, 12 = 37:48, 13 = 39:57, 14 = 40:39, 15 = 42:30, 16 = 45:28, 17 = 61:46 18 = 61:50, 19 = 62:62, 20 = 63:26.

X: 1 = 1:17, 2 = 3:45, 3 = 3:47, 4 = 5:28, 5 = 8:54, 6 = 9:41, 7 = 10:10, 8 = 11:63, 9 = 12:15, 10 = 14:1, 11 = 25:15, 12 = 15:60, 13 = 25:47, 14 = 26:30, 15 = 39:64, 16 = 41:57, 17 = 44:28.

XI: 1 = 3:17, 2 = 4:36, 3 = 5:26, 4 = 9:24, 5 = 19:33, 6 = 28:3, 7 = 29:26.

XII: 1 = 1:17, 2 = 1:22, 3 = 4:30, 4 = 4:48, 5 = 5:42, 6 = 6:30, 7 = 6:57, 8 = 7:11, 9 = 8:29, 10 = 9:31, 11 = 9:48, 12 = 10:9, 13 = 10:20, 14 = 10:48, 15 = 12:41, 16 = 14:22, 17 = 17:13, 18 = 18:14, 19 = 18:63, 20 = 19:42, 21 = 9:45, 22 = 19:46, 23 = 20:2, 24 = 20:58, 25 = 24:37, 26 = 25:1, 27 = 27:55, 28 = 29:16, 29 = 31:54, 30 = 33:9, 31 = 33:44, 32 = 33:47, 33 = 45:53, 34 = 48:3, 35 = 49:56, 36 = 51:33, 37 = 56:38, 38 = 58:19, 39 = 58:64, 40 = 59:6, 41 = 61:52, 42 = 63:31.

XIII: 1 = 3:13, 2 = 17:22, 3 = 17:44, 4 = 19:49, 5 = 21:47, 6 = 23:24, 7 = 31:31, 8 = 38:36, 9 = 43:7, 10 = 45:38.

XIV: 1 = 4:14, 2 = 6:31, 3 = 17:20, 4 = 20:23, 5 = 20:25, 6 = 21:58, 7 = 26:53, 8 = 33:24, 9 = 37:46, 10 = 38:36, 11 = 43:2.

XV: 1 = 1:19, 2 = 1:39, 3 = 3:11, 4 = 3:12, 5 = 3:50, 6 = 5:12, 7 = 6:10, 8 = 6:60, 9 = 7:7, 10 = 7:14, 11 = 7:43, 12 = 7:52, 13 = 8:43, 14 = 9:35, 15 = 10:22, 16 = 11:17, 17 = 11:35, 18 = 11:64, 19 = 12:45, 20 = 13:23, 21 = 13:48, 22 = 13:61, 23 = 13:62, 24 = 14:27, 25 = 14:31, 26 = 23:60, 27 = 30:57, 28 = 2:10, 29 = 3:50, 30 = 6:16, 31 = 9:7, 32 = 15:15, 33 = 16:53, 34 = 19:77, 35 = 34:37.

XVI: 1 = 2:48, 2 = 4:40, 3 = 8:57, 4 = 9:16, 5 = 9:23, 6 = 9:43, 7 = 10:34, 8 = 11:55, 9 = 12:20, 10 = 15:28, 11 = 33:12, 12 = 58:84, 13 = 59:6.

XVII: 1 = 4:58, 2 = 7:38, 3 = 10:50, 4 = 12:40, 5 = 14:35, 6 = 17:18, 7 = 18:40, 8 = 19:51, 9 = 23:28, 10 = 23:31, 11 = 28:15, 12 = 29:64, 13 = 37:46, 14 = 44:36, 15 = 44:58, 16 = 47:50, 17 = 47:54, 18 = 48:53, 19 = 50:17, 20 = 51:59, 21 = 53:51, 22 = 53:58, 23 = 55:64, 24 = 58:50.

Space forbids my transcribing all these rime examples with their Ts'ie yün values; selection must suffice:

I: 1 *təng*: *kung* 2 *t'ung*: *siāng* 3 *kīək*: *tsiəwok*: *k'vk*: *d'uok* 8 *kīvng*: *kung*; 10 *dz'iəp*: *tāp*: *kwək* 12 *ngiəwok*: *tək*: *līək*: *dz'iət* 15 *dz'iək*: *nīiəp* 16 *dz'iəp*: *nīək*: *siət* 17 *dz'iət*: *dz'iəp*: *piuk*.

II: 1 *tsiət*: *b'iwət*: *b'iei* 2 *d'iet*: *swi'* 3 *siək*: *zi'* 4 *t'āi'*: *tək* 5 *d'āt*: *nguāi'* 6 *tsi'*: *siət* 7 *d'iei'*: *lāk* 8 *b'wai'*: *dz'iət* 9 *t'uāi'*: *kiət* 10 *dz'iət*: *tsiāi'* 11 *dz'iwāt*: *b'wai'* 12 *·iei'*: *kiwet*; 13 *ngiəwot*: *dz'wi'* 14 *yuāi'*: *nguāi'*: *kiwet* 15 *luo'*: *tək* 17 *yuāi'*: *d'āt* 18 *liāt*: *piwəi'* 19 *tsiət*: *tsi'* 20 *b'iei'*: *k'iwet* 23 *d'iek*: *tāu'*: *k'uk* 24 *iwok*: *d'uō'* 25 *ljiw'*: *ngiət* 27 *tsiāi'*: *tək* 32 *k'iwət*: *ljiw'*.

III: 1 *tək*: *tsi* 2 *tək*: *χji* 3 *i*: *kiek* 4 *pək*: *si* 6 *k'ji*: *siək* 7 *χji*: *g'īək* 8 *tsi*: *k'iwok* 9 *dz'āi*: *piuk* 10 *ywək*: *zī* 11 *k'ji*: *t'āk* 12 *dz'iək*: *zī* 17 *kwək*: *tsi* 18 *χāi*: *tək* 26 *χji*: *tsiək*: *piżu* 29 *mīuk*: *nīi* 32 *mīuk*: *χji*: *lāi*: *tək*.

IV: 1 *pāu*: *tək* 3 *k'iwok*: *pāu* 4 *tsiəwok*: *pau* 5 *piāu*: *b'īuk* 6 *d'āu*: *tək* 7 *ts'āu*: *mīuk* 8 *kək*: *pāu* 9 *g'īək*: *pau* 12 *·iāu*: *pāu*: *siək*.

V: 1 *kwək*: *·iżu* 3 *tsiək*: *jīżu* 4 *mīżu*: *siək* 5 *tsiəwok*: *kīżu* 7 *siżu*: *d'uok* 10 *jīżu*: *piuk*.

VI: 1 *d'āu*: *zī* 2 *dz'iāu*: *χuāi* 3 *·iāu*: *tsiāi* 4 *lji*: *d'āu* 5 *tsi*: *d'āu* 6 *kau*: *tsi* 7 *d'īāu*: *si* 8 *k'ji*: *ts'āu* 9 *g'ji*: *siāu* 10 *lāu*: *χāi* 11 *zī*: *d'ieu* 12 *zī*: *pāu* 13 *d'āi*: *pāu* 14 *tsi*: *pāu* 15 *lāu*: *lāi* 18 *k'āu*: *k'ji* 19 *d'āu*: *zī* 20 *ts'āu*: *d'āi*.

VII: 1 *zī*: *jīżu* 2 *b'īəu*: *χāi* 3 *jīżu*: *χji* 4 *lji*: *jīżu* 5 *tsi*: *māu* 6 *χāi*: *jīżu* 7 *χji*:

ni<sub>2</sub> 8 ki<sub>2</sub>: d'<sub>4</sub>i 9 ng<sub>2</sub>i: d'<sub>4</sub>i; 13 i<sub>2</sub>u: x<sub>2</sub>ji 14 z<sub>1</sub>i: i<sub>2</sub>u 15 mu<sub>2</sub>i: i<sub>2</sub>u 19 d'<sub>4</sub>i: ts<sub>2</sub>iu 21 z<sub>1</sub>i: dz'<sub>4</sub>i: x<sub>2</sub>iu 23 si<sub>2</sub>u: ts<sub>1</sub>i.

VIII: 1 d<sub>2</sub>z'<sub>4</sub>ek: mi<sub>2</sub>: pi<sub>2</sub>uk 2 kw<sub>2</sub>k: ts<sub>2</sub>iu 3 pi<sub>2</sub>u: luk 5 ts<sub>2</sub>iu: a<sub>2</sub>k 9 ts<sub>2</sub>iu: ts<sub>2</sub>iwok.

IX: 1 u<sub>2</sub>k: ki<sub>2</sub>wo 2 t<sub>2</sub>uo: luo: t<sub>2</sub>ek 3 si<sub>2</sub>uk: luo 4 yuo: ts<sub>2</sub>iwok 5 ki<sub>2</sub>wo: kw<sub>2</sub>k 6 ni<sub>2</sub>wo: t<sub>2</sub>ek 8 p'<sub>2</sub>uk: kuo 9 yw<sub>2</sub>k: si<sub>2</sub>wo 12 mi<sub>2</sub>uk: nuo 16 pi<sub>2</sub>uk: ts'<sub>2</sub>wo.

X: 1 b'<sub>2</sub>iu: x<sub>2</sub>ai 2 jiu: ts<sub>1</sub>i 3 pi<sub>2</sub>u: ts<sub>1</sub>i 4 mi<sub>2</sub>u: x<sub>2</sub>ji 5 k'<sub>2</sub>iu: d'<sub>2</sub>i 6 lji: x<sub>2</sub>ai: t'<sub>2</sub>iu 7 i: kiu 8 lji: dz'<sub>2</sub>iu 12 kiu: ts<sub>1</sub>ai 14 k'<sub>2</sub>ji: ts<sub>1</sub>iu 17 lji: ts<sub>1</sub>iu: y<sub>2</sub>ai.

XI: 1 l<sub>2</sub>ai: y<sub>2</sub>u 2 y<sub>2</sub>u: x<sub>2</sub>ai 4 d'<sub>2</sub>eu: ts<sub>1</sub>i 5 y<sub>2</sub>u: z<sub>1</sub>i 6 y<sub>2</sub>u: zi, 7 ts<sub>2</sub>u: x<sub>2</sub>ji.

XII: 1 x<sub>2</sub>ai: ts'<sub>2</sub>wo 2 d'<sub>2</sub>ai: ts'<sub>2</sub>wo 3 ts<sub>1</sub>ai: si<sub>2</sub>wo 4 x<sub>2</sub>ji: xi<sub>2</sub>wo 5 dz'<sub>2</sub>ai: k'uo 6 dz'<sub>2</sub>i: ki<sub>2</sub>wo 8 ni<sub>2</sub>wo: ts<sub>1</sub>i 11 d'<sub>2</sub>wo: l<sub>2</sub>ai 12 ts'<sub>2</sub>wo: ts<sub>1</sub>i 14 ki<sub>2</sub>wo: z<sub>1</sub>i 15 ng<sub>2</sub>wo: x<sub>2</sub>ji 16 kuo: si<sub>2</sub> 17 lji: xi<sub>2</sub>wo.

XIII: 1 b'<sub>2</sub>iu: t'<sub>2</sub>au 2 ng<sub>2</sub>iu: d'<sub>2</sub>au 3 g'<sub>2</sub>iu: ts'<sub>2</sub>iu: d'<sub>2</sub>au 5 pi<sub>2</sub>u: si<sub>2</sub>au 6 ts<sub>2</sub>du: dz'<sub>2</sub>iu 7 ts<sub>1</sub>iu: d'<sub>2</sub>au.

XIV: 1 ts<sub>2</sub>iu: ts'<sub>2</sub>iu 2 i<sub>2</sub>u: dz'<sub>2</sub>iu 3 i<sub>2</sub>u: jiu 4 kiu: i<sub>2</sub>u 5 ts'<sub>2</sub>iu: ts'<sub>2</sub>iu 6 t'<sub>2</sub>iu: ki<sub>2</sub>u.

XV: 1 kuo: g'<sub>2</sub>u 2 luo: k<sub>2</sub>au 3 ki<sub>2</sub>wo: t<sub>2</sub>au 5 ki<sub>2</sub>wo: d'<sub>2</sub>z<sub>2</sub>au 7 dz'<sub>2</sub>wo: si<sub>2</sub>u 8 j<sub>2</sub>u: ts'<sub>2</sub>wo 9 j<sub>2</sub>u: ki<sub>2</sub>wo 10 k'uo: i<sub>2</sub>u 11 ts'<sub>2</sub>du: ts'<sub>2</sub>wo 12 k<sub>2</sub>au: ki<sub>2</sub>wo 15 t'uo: li<sub>2</sub>u 16 kau: zi<sub>2</sub>wo 24 ng<sub>2</sub>u: ki<sub>2</sub>wo; 28 k'uo: k'<sub>2</sub>u 29 luo: y<sub>2</sub>u 32 d'<sub>2</sub>u: k'<sub>2</sub>wo 35 k'<sub>2</sub>u: nuo.

XVI: 1 ng<sub>2</sub>iu: n<sub>2</sub>z<sub>2</sub>wo 2 kiu: ki<sub>2</sub>wo 3 n<sub>2</sub>z<sub>2</sub>iu: kuo 4 k'uo: ts<sub>1</sub>iu 5 kiu: tuo 13 ts<sub>1</sub>iu: ng<sub>2</sub>wo.

XVII: 1 ka: t'<sub>2</sub>iu 2 ia: m<sub>2</sub>u 3 pi<sub>2</sub>u: ka 4 ia: ki<sub>2</sub>u 5 k'<sub>2</sub>u: ya 7 dz'<sub>2</sub>äu: ka 8 tieu: ka 9 x<sub>2</sub>ai: ts<sub>1</sub>i: ts<sub>1</sub>ia 10 ka: ng<sub>2</sub>u 11 ka: ts<sub>2</sub>u 12 i<sub>2</sub>u: ka 17 ka: zi 18 ia: dz'<sub>2</sub>i 19 ma: pa<sub>2</sub>u 20 ya: dz'<sub>2</sub>ai 21 ka: ts<sub>1</sub>i.

Table I is highly important for the study of the following groups. It shows us that the author has had very modest demands upon the similarity in vowels between the rime words. If only the final consonant were the same, then anything could rime: *wong*: *āng*: *iang*. This must always be kept in mind when we judge the rimes in some of the tables. On the other hand, there was a considerable freedom in another respect, as appearing from the same table: »ju sheng» words -k: -p: -t rime freely with each other, and the author has evidently considered the abrupt word ending in all such words to be a sufficient acoustic similarity for constituting a rime. Rimes of this kind can be observed already in Lao-ts<sub>1</sub> and Chuang-ts<sub>1</sub>.

From table II we can clearly infer that the »falling ju sheng» -k' and -t' were still living in middle Han time. It is true that some of our examples are not conclusive, if we assume that all »ju sheng» -k, -t were implosive in the Yi lin

language (cf. below); but the great majority of the cases are quite binding. That these final *-k'*, *-t'* were flourishing in Han time is confirmed by various other sources, e. g. the ritual songs given in the *Han shu*.

Table III shows that the final *-g* in categories 来 \**ləg* and 基 \**kiəg*, fully discussed above, was still quite vigorous at the beginning of our era — a very important fact.

Tables IV, V, VI and VII agree excellently with our results regarding the *Shi king*, if we assume that the final *-g* of the *Ts'ie yün* finals *-āu*, *-au*, *-iāu*, *-ieu*, *-iəu* was preserved just as well as in the words of table III just mentioned.

With table VIII and all the following, down to XVIII, however, we are entirely at sea. Much labour has been devoted above to proving that the *Ts'ie yün* finals *-əu* (type-word 後), *-iəu* (type 取), *-uo* (type 故), *-iwo* (type 居) and *-a* (type 家, Arch. \*-a) had no final guttural in Arch. Chinese. Here we find all these types, except the last, constantly riming with »ju sheng« words (*-k* preserved to our day) and with word types for which we have had to conclude Arch. *-g*: in tables VIII and IX with »ju sheng« *-k*; in tables X, XI and XII with *Ts'ie yün* *-əi*, *-i*, which were Arch. \*-əg, *-iəg* and which (as just now concluded from table III) had their *-g* preserved in the *Yi lin* language; in tables XIII and XIV with the *-āu*, *-au*, *-iāu*, *-ieu*, which were Arch. *-og(k)*, *-āg(k)*, *-iāg(k)*, *-iāg(k)*; in table XIV with the *-iəu*, which was Arch. *-iug* and *-iog(k)*. Finally, type 家 *ka* (Arch. \**ka*) rimes (table XVII), not with »ju sheng«, it is true, but with various other finals for which we have concluded Arch. *-g*: *əu* (母 *mug*), *-əi* (来 \**ləg*), *-iəu* (牛 \**ngiug*, 憾 \**iog*), *-āu* (保 \**pog*), etc.

Are we not, indeed, forced to admit that these finals *-əu*, *-iəu*, *uo*, *-iwo*, *-a* (types 後, 取, 故, 居, 家) really did have a final guttural in Archaic Chinese, after all, in the way Simon has supposed, and that these gutturals were still living in *Yi lin* time? Since we have already seen (table I) that the vocalism is immaterial in the *Yi lin* rimes, we would then get acceptable rimes in all the tables, in so far as all words in tables III—XVII would then have ended either in *-k* or in *-g*!

When I took up the inquiries resulting in the present paper, I started not with the *Shi king* but with the *Yi lin*, and I confess that for some time I was sorely tempted to conclude, from our tables VIII—XVII, that the said *Ts'ie yün* finals *-əu*, *-iəu*, *uo*, *-iwo*, *-a* also had Arch. *-g*, in the way Simon had proposed.

But then, when extending my researches from the *Yi lin* to the older stage, that of the *Chou* time poetry, I was forced to conclude that this was impossible. There

are poetical products of a considerable extent from that era: there is above all the Shī king, but there is also the large collection Ch'u ts'i; there is a long poem in the Yi king (i. e. the section Siang, cut up and spoiled in the ordinary Yi editions, but extracted and printed as a connected poem in the excellent Imperial edition Yü tsuan Chou yi chê chung); there are two long poems in Sün-tsī (Ch'eng siang p'ien and Fu p'ien); and there are a fair number of shorter stanzas in various other works from the Chou epoch, the rimes of which have been recorded by Tuan Yü-ts'ai (Liu shu yin kün piao). In all this very extensive rime material we constantly recognize the absence of final consonants in these word types. If -*qu* (後) had been -*g* or -*ug* and if -*iu* (取) had been -*iug*, they would sometimes at least rhyme with -*uk*, but they do not. If -*uo*, -*iwo* (故, 居) had been *kuog*, *kiwog*, they would sometimes rhyme with -*uok*, -*iwok*, but I know of hardly a single safe example. If 家 had been *kag* or *kag*, it would sometimes rhyme with -*ak*, -*iak* or -*ak* but it never does. And these large categories of common characters 故, 處, 居, 家 etc. would at least sometimes occur as phonetics in characters for *shu sheng* words, but they never do. We cannot avoid the necessary conclusion: in Chou time there was no -*g* in these groups, and if in Han time they rhyme with words ending in -*k* and -*g*, this must be due to a secondary phenomenon, some sound evolution in the language from Chou time to Han time. And what this was is not very difficult to imagine.

It must be remembered that if we have reason to believe that there were a number of dialects already in Chou time, it is positively certain, from various testimonies, that there were very considerable dialectal differences in Han time, when the Chinese imperium was rapidly enlarged over enormous areas. We have seen that the Ts'ie yün language can, on the whole, be derived, as a direct descendant, from the Arch. Chinese of the Shī king; only on one important point (see p. 140 above), we had to conclude that the Shī language had a peculiarity that has never existed in the direct ancestor of the Ts'ie yün language. When we come down to Han time, with its richly varying dialects, we cannot at all be sure that a document like the Yi lin was written in a dialect that was in the direct line between the Shī and the Ts'ie yün, or, if we may express it thus: that the Yi lin language was the daughter of the Shī language and that the Ts'ie yün language was the daughter of the Yi lin language. On the contrary, we can expect to find peculiarities in the Yi lin dialect that are not reflected in the Ts'ie yün dialect, since the latter was not a direct descendant of the former but of some sister dialect of it in Han time.

If, on the one hand, we keep in mind that a *licentia poetica* allowing -*o* and -*u* to

rime existed already in certain works of Chou time (e.g. Lao-tsī and Chuang-tei); and if, on the other hand, we make the very plausible supposition that in middle Han time, in certain dialects, all final *-k* and *-g* had become implosive (屋 *·o<sub>k</sub>* etc.), we need only operate with *one* single special feature of the Yi lin dialect in order to understand all our peculiar rimes above. I propose the hypothesis that *ə* has become *o*:

Type-words 得, 來, 基.



There is nothing very bold in this supposition of *ə* > *o*. On the contrary, it is a very small and natural change. That *ə* and *o* are felt to be acoustically closely akin is shown by Sino-Japanese, which regularly renders Chinese *ə* by *o*: 得 Ts'ie yün *tək* > S. J. *toku*, 根 *kən* > *kon* etc. And the evolution *ə* > *o* has taken place in various later Chinese dialects. Ts'ie yün 北 *pək* > Pek. (high style) *po*, 墓 *mək* > *mo*. Ts'ie yün 根 *kən* and 登 *təng* have become *kəl*, *təl* in various Shansi dialects. Ts'ie yün 根 *kən* > Foochow *koung* etc. Nothing is more organically simple and natural than this evolution.

With this hypothesis about the Yi lin dialect, we obtain the following values in the rime tables III—XVII:

III: 1 *to<sub>k</sub>*: *tsiəo<sub>g</sub>* 2 *to<sub>k</sub>*: *χiəo<sub>g</sub>* 3 *ziəo<sub>g</sub>*: *kie<sub>k</sub>* 4 *po<sub>k</sub>*: *siəo<sub>g</sub>* 6 *k'iəo<sub>g</sub>*: *siəo<sub>k</sub>* 7 *χiəo<sub>g</sub>*: *g'iəo<sub>k</sub>* 8 *t'iəo<sub>g</sub>*: *k'iəwo<sub>k</sub>* 9 *dz'iəo<sub>g</sub>*: *piu<sub>k</sub>* 10 *g'we<sub>k</sub>*: *d'iəo<sub>g</sub>* 11 *k'iəo<sub>g</sub>*: *t'ə<sub>k</sub>* 12 *d'iəo<sub>k</sub>*: *d'iəo<sub>g</sub>* 17 *kwo<sub>k</sub>*: *tsiəo<sub>g</sub>* 18 *χo<sub>g</sub>*: *to<sub>k</sub>* 26 *χiəo<sub>g</sub>*: *t'iəo<sub>k</sub>*: *piu<sub>g</sub>* 29 *miəo<sub>k</sub>*: *niəo<sub>g</sub>* 32 *miəo<sub>k</sub>*: *χiəo<sub>g</sub>*: *lo<sub>g</sub>*: *to<sub>k</sub>*.

IV: 1 *po<sub>g</sub>*: *to<sub>k</sub>* 3 *k'iəwo<sub>k</sub>*: *po<sub>g</sub>* 4 *tsiəwo<sub>k</sub>*: *pā<sub>g</sub>* 5 *piā<sub>g</sub>*: *b'iəu<sub>k</sub>* 6 *d'o<sub>g</sub>*: *to<sub>k</sub>* 7 *ts'o<sub>g</sub>*: *miəo<sub>k</sub>* 8 *ke<sub>k</sub>*: *po<sub>g</sub>* 9 *g'iəo<sub>k</sub>*: *pā<sub>g</sub>* 12 *·iā<sub>k</sub>*: *po<sub>g</sub>*: *siəo<sub>k</sub>*.

V: 1 *kwo<sub>k</sub>*: *·iəo<sub>g</sub>* 3 *tsiəo<sub>k</sub>*: *giu<sub>g</sub>* 4 *miu<sub>g</sub>*: *siəo<sub>k</sub>* 5 *tsiəwo<sub>k</sub>*: *kiu<sub>g</sub>* 7 *śiəo<sub>g</sub>*: *d'uəo<sub>k</sub>* 10 *giu<sub>g</sub>*: *piu<sub>k</sub>*.

VI: 1 *d'o<sub>g</sub>*: *dz'iəo<sub>g</sub>* 2 *dz'iā<sub>g</sub>*: *χuo<sub>g</sub>* 3 *·iā<sub>k</sub>*: *tso<sub>g</sub>* 4 *liəo<sub>g</sub>*: *d'o<sub>g</sub>* 5 *tsiəo<sub>g</sub>*: *d'o<sub>g</sub>* 6 *ka<sub>g</sub>*: *t'iəo<sub>g</sub>* 7 *d'iā<sub>g</sub>*: *siəo<sub>g</sub>* 8 *k'iəo<sub>g</sub>*: *ts'o<sub>g</sub>* 9 *g'iəo<sub>g</sub>*: *siā<sub>k</sub>* 10 *lo<sub>g</sub>*: *χo<sub>g</sub>* 11 *d'iəo<sub>g</sub>*: *d'iā<sub>g</sub>* 12 *d'iəo<sub>g</sub>*: *po<sub>g</sub>* 13 *d'o<sub>g</sub>*: *po<sub>g</sub>* 14 *tsiəo<sub>g</sub>*: *pā<sub>g</sub>* 15 *lo<sub>g</sub>*: *lo<sub>g</sub>* 18 *k'o<sub>g</sub>*: *k'iəo<sub>g</sub>* 19 *d'o<sub>g</sub>*: *d'iəo<sub>g</sub>* 20 *ts'o<sub>g</sub>*: *d'o<sub>g</sub>*.

VII: 1 *d'iəo<sub>g</sub>*: *giu<sub>g</sub>* 2 *b'iəu<sub>g</sub>*: *χo<sub>g</sub>* 3 *giu<sub>g</sub>*: *χiəo<sub>g</sub>* 4 *liəo<sub>g</sub>*: *giu<sub>g</sub>* 5 *tsiəo<sub>g</sub>*: *mu<sub>g</sub>* 6 *χo<sub>g</sub>*: *giu<sub>g</sub>*.

7 *χio<sub>g</sub>*: *miu<sub>g</sub>* 8 *kiu<sub>g</sub>*: *d'o<sub>g</sub>* 9 *ngio<sub>g</sub>*: *d'o<sub>g</sub>*; 13 *·io<sub>g</sub>*: *χio<sub>g</sub>* 14 *d'io<sub>g</sub>*: *·io<sub>g</sub>* 15 *muo<sub>g</sub>*: *·io<sub>g</sub>*  
19 *d'o<sub>g</sub>*: *tsio<sub>g</sub>* 21 *d'io<sub>g</sub>*: *dz'o<sub>g</sub>*: *χio<sub>g</sub>* 23 *d'io<sub>g</sub>*: *tsio<sub>g</sub>*.

VIII: 1 *d'io<sub>k</sub>*: *miwo*: *piu<sub>k</sub>* 2 *kwo<sub>k</sub>*: *t'iu* 3 *piwo*: *lo<sub>k</sub>* 5 *t'iu*: *·a<sub>k</sub>* 9 *t'iu*: *tsiwo<sub>k</sub>*.

IX: 1 *·o<sub>k</sub>*: *ki<sub>k</sub>* 2 *t'o*: *lo<sub>k</sub>*: *to<sub>k</sub>* 3 *si<sub>k</sub>*: *lo* 4 *g'o*: *tsiwo<sub>k</sub>* 5 *ki<sub>k</sub>*: *kwo<sub>k</sub>* 6 *nio*: *to<sub>k</sub>*  
8 *p'iu<sub>k</sub>*: *ko* 9 *g'wo<sub>k</sub>*: *si<sub>k</sub>* 12 *mio<sub>k</sub>*: *no* 16 *piu<sub>k</sub>*: *ts'io*.

X: 1 *b'wo*: *χo<sub>g</sub>* 2 *giwo*: *t'io<sub>g</sub>* 3 *piwo*: *t'io<sub>g</sub>* 4 *miwo*: *χio<sub>g</sub>* 5 *k'iu*: *dio<sub>g</sub>* 6 *lio<sub>g</sub>*:  
*χo<sub>g</sub>*: *tiu* 7 *gio<sub>g</sub>*: *kiu* 8 *lio<sub>g</sub>*: *dz'iu* 12 *kiu*: *tso<sub>g</sub>* 14 *k'io<sub>g</sub>*: *t'iu* 17 *lio<sub>g</sub>*: *t'iu*: *g'o<sub>g</sub>*.

XI: 1 *lo<sub>g</sub>*: *g'u* 2 *g'u*: *χo<sub>g</sub>* 4 *d'u*: *t'io<sub>g</sub>* 5 *g'u*: *d'io<sub>g</sub>* 6 *g'u*: *dzio<sub>g</sub>* 7 *tsu*: *χio<sub>g</sub>*.

XII: 1 *χo<sub>g</sub>*: *t'io* 2 *d'o<sub>g</sub>*: *t'io* 3 *tso<sub>g</sub>*: *si<sub>g</sub>* 4 *χio<sub>g</sub>*: *χio* 5 *dz'o<sub>g</sub>*: *k'o* 6 *dz'io<sub>g</sub>*: *ki<sub>g</sub>* 8 *nio*:  
*tsio<sub>g</sub>* 11 *d'io*: *lo<sub>g</sub>* 12 *t'io*: *tsio<sub>g</sub>* 14 *ki<sub>g</sub>*: *d'io<sub>g</sub>* 15 *ngio*: *χio<sub>g</sub>* 16 *ko*: *si<sub>g</sub>* 17 *lio<sub>g</sub>*: *χio*.

XIII: 1 *b'wo*: *t'og* 2 *ngiwo*: *d'o<sub>g</sub>* 3 *g'iu*: *ts'iu*: *d'o<sub>g</sub>* 5 *piwo*: *siā<sub>k</sub>* 6 *tso<sub>g</sub>*: *dz'iu*  
7 *t'iu*: *d'o<sub>g</sub>*.

XIV: 1 *tsio<sub>g</sub>*: *ts'iu* 2 *giu<sub>g</sub>*: *dz'iu* 3 *·io<sub>g</sub>*: *giwo* 4 *kiu*: *·io<sub>g</sub>* 5 *t'io<sub>g</sub>*: *ts'iu* 6 *t'iu*:  
*kiu<sub>g</sub>*.

XV: 1 *ko*: *g'iu<sub>g</sub>* 2 *lo*: *ko<sub>g</sub>* 3 *ki<sub>g</sub>*: *to<sub>g</sub>* 5 *ki<sub>g</sub>*: *d'ia<sub>g</sub>* 7 *dz'io*: *si<sub>g</sub>* 8 *giu<sub>g</sub>*: *t'io* 9 *giu<sub>g</sub>*:  
*ki<sub>g</sub>* 10 *k'o*: *·io<sub>g</sub>* 11 *ts'o<sub>g</sub>*: *t'io* 12 *ko<sub>g</sub>*: *ki<sub>g</sub>* 15 *t'o*: *lio<sub>g</sub>* 16 *ka<sub>g</sub>*: *dzio<sub>g</sub>* 24 *ngiu<sub>g</sub>*: *ki<sub>g</sub>*:  
28 *k'o*: *k'u* 29 *lo*: *g'u* 32 *d'u*: *k'io* 35 *k'u*: *no*.

XVI: 1 *ngiu<sub>g</sub>*: *nio* 2 *kiu*: *ki<sub>g</sub>* 3 *niu*: *ko* 4 *k'o*: *t'iu* 5 *kiu*: *to* 13 *t'iu*: *ngio*.

XVII: 1 *ka*: *tiu* 2 *diā*: *mu<sub>g</sub>* 3 *piu<sub>g</sub>*: *ka* 4 *diā*: *kiu<sub>g</sub>* 5 *k'u*: *g'a* 7 *dz'ia<sub>g</sub>*: *ka* 8  
*tiā<sub>g</sub>*: *ka* 9 *χo<sub>g</sub>*: *t'io<sub>g</sub>*: *t'ia* 10 *ka*: *ngiu<sub>g</sub>* 11 *ka*: *tsu* 12 *·io<sub>g</sub>*: *ka* 17 *ka*: *dzio<sub>g</sub>* 18 *diā*:  
*dz'o<sub>g</sub>* 19 *mā*: *po<sub>g</sub>* 20 *g'a*: *dz'o<sub>g</sub>* 21 *ka*: *t'io<sub>g</sub>*.

It is easily seen from these tables that the rime system of the Yi lin, though far from ideal, is none the less quite satisfactory for simple poetry of this somewhat vulgar kind. It is by no means so weird and impossible as it would appear at first sight, when compared with the strict Shi king system or when studied in the light of the Ts'ie yün, younger by five centuries. One point should be emphasized: the rimes of the Yi lin by no means force us to accept any Archaic Chinese -g in the categories -gu (後), -iu (取), -uo (故), -iwo (居) -a (家).

#### APPENDIX: SOME DATA ABOUT THE YI LIN TEXT.

Tradition gives Tsiao Yen-shou, who lived in Suan-ti's time (73—49 B. C.), as the author of the Yi lin. The earliest source where this has been directly stated is, however, quite late: the literary chapter of the Suei shu (Suei shu king tsi

chī).<sup>1)</sup> A Ming scholar Cheng Hiao, and especially the early Ts'ing scholar Ku Yen-wu (Ji chī lu, kūan 18), have disagreed with this attribution. Some of the arguments of the latter are void of value, as pointed out by the editors of the Sī k'ū t'süan shu tsung mu: when Ku insists that several stanzas refer to incidents mentioned in the Han shu of Pan Ku and therefore seem to be based on that book (1st c. A. D.), the editors justly remark that those were real historical happenings well known long before Pan Ku. When Ku finds it suspect that the Tso chuan has been drawn upon, a work not established in the official schools until in the first years of our era, it is pointed out that this work was taught and expounded throughout Western Han time by Chang Ts'ang's school.<sup>2)</sup> But there are, none the less, several stanzas adduced by Cheng and Ku which seem to allude to incidents *later* than Süan-ti's time. One of these, the Sī k'ū editors admit, is quite clear: the stanza 45:43, which alludes to happenings in the year 33 B. C. But this, they declare, may be due to some interpolation and is not necessarily fatal to the work as a whole. Ku's verdict that the Yi lin was written by somebody after Eastern Han time, i. e. in the Six dynasties' times, they do not accept.

The arguments of the Sī k'ū editors are quite sound. There are facts that seem to indicate that the text we have is not entirely in its original form. In various places a stanza is repeated (4:49 is a repetition of 1:19; 6:32 of 3:50 etc.), which shows that the original stanza has been lost and the gap filled in this clumsy way. Sometimes a stanza is mutilated: only three or even two of its four lines are left. Interpolations may thus have very well taken place. Nevertheless the objections of Cheng's and Ku's about probable or at least possible allusions to historical incidents in Yüan-ti's and Ch'eng-ti's times should not be treated too lightly. Let us therefore scrutinize the evidence for Tsiao Yen-shou's authorship.

This is, indeed, very weak. As mentioned above, it is not before T'ang time (in the Suei shu) that Tsiao is directly indicated as the author of the Yi lin. The book catalogue written by Liu Hin (Ts'i lüe = Han shu, I wen chī) does not mention any work with this title, nor any other work by Tsiao Yen-shou. Tsiao is first mentioned by Pan Ku in the Han shu, k. 75 (King Fang chuan) and k. 88 (Ju lin chuan). It is there said that King Fang, who became a »lang« in 45 B. C. and later on became the famous head of a Yi school, had studied the Yi under

<sup>1)</sup> In old editions of the Yi lin there is a preface by 費直 Fei Chi, stating that it was written in Wang Mang's time by Tsiao Yen-shou. Since Fei Shi was several decades and Tsiao Yen-shou half a century earlier than Wang Mang, this is evidently a spurious preface, which has to be left out of consideration entirely.

<sup>2)</sup> Cf. my article: The early history of the Chou li and Tso chuan texts, Bull. Mus. F. E. Ant. III.

Tsiao Yen-shou, a man from Liang; and it is stated that the studies especially concerned the prognostication of disasters, drought, rain, storm etc. by aid of the Yi. Pan Ku even gives the clue to the question why Liu Hin has not indicated Tsiao as the originator of a Yi school (k. 88): Tsiao had often said to King that he had learned his Yi lore from Meng Hi, and therefore King had called his school the Meng school. As the »Meng and King school» it is duly recorded in Liu Hin's bibliography. There can thus be no reasonable doubt that a certain Tsiao Yen-shou existed in the middle of the 1st century B. C. and was an expert on occult lore based on the Yi. But the question is: why has this Tsiao been connected with the Yi lin and indicated as its author? Pan Ku says nothing whatever of the kind.

The book title Yi lin was quite common in Eastern Han and Liu ch'ao times.

The earliest document referring expressly to a Yi lin is the 東觀漢記 Tung kuan Han ki, a work first ordered by Ming-ti but not completed until the period Hi-p'ing of Ling-ti. Only fragments of it are left. In the Wu ying tien tsü chen pan edition of it, k. 7 p. 5, we find a narrative about Prince Hien of P'ei, with the personal name Fu, who »liked King's (i. e. King Fang's) Yi». In the year 62 A. D. there was a great drought. The Emperor went to the Yün-t'ai (Cloud terrace) and there himself prognosticated by aid of the 周易卦林 Chou Yi kua lin. The verdict he obtained was: *i feng hü hu, ta yü tsiang tsi* »when the ants block their holes and doors, a great rain is imminent». And the next day there was a great rain. The Emperor consulted Prince Fu about this, and that gentleman wrote a memorial in which he said: In the paragraph *kien* of section *chen* in the Yi kua it is said: *i feng hü hu, ta yü tsiang tsi*; and he goes on to expound this. Now, in the present Yi lin, section *chen*, paragraph *kien*, we find exactly the line in question: *I feng hü hu, ta yü tsiang tsi*. Thus, as pointed out by the Si k'u editors, the Yi lin in its present arrangement existed in 62 A. D. and was used for prognostication. But nothing is said of its author in the Tung kuan Han ki.

The next document referring to a Yi lin is the Hou Han shu (k. 82, Ts'uei Yin chuan). It is there clearly stated that Ts'uei Yin's grandfather, 崔篆 Ts'uei Chuan, who flourished in Wang Mang's time, »wrote a Chou Yi lin in 64 chapters». The present Yi lin is in 64 chapters. The Hou Han shu is comparatively late (Vth century) but it is a well-known fact that it was largely based on earlier documents, *inter alia* the Tung kuan Han ki just mentioned. Indeed, in the Tung kuan Han ki still extant we find a passage (k. 16, p. 16) about Ts'uei Yin and Ts'uei chuan which, as far as it goes (only fragments of the work are left) agrees word for word with the Hou Han shu chapter. It is therefore legitimate to con-

clude that this chapter is but a copy of the biography in the original (complete) Tung Kuan Han ki, and that thus the notice about Ts'uei Chuan's Yi lin goes back to Han time.

The Hou Han shu, k. 112 B, p. 2 a, tells us of one more Yi lin from Han time; its author was Hü Tsün, who was a skilful prognosticator: »The Yi lin he wrote is current to this day». Hü Tsün was grandfather of Hü Man, who flourished in Huan-ti's (147—167) time.

If we then come down to the Suei shu (King tsi chī), there are various Yi lin mentioned. First there is our present Yi lin<sup>1)</sup> attributed to Tsiao Yen-shou (Tsiao Kung). Then it gives one Chou Yi 守 shou lin, and one Chou Yi 集 tsi lin, both by King Fang. Further it mentions a Yi lin by Fei Chī, and also the Yi 新 sin lin by Hü Tsün (the one mentioned above). And then there are various later Yi lin, by Kuo P'o and others.

Whether King Fang (middle of 1st cent. B. C.) and Fei Chī (last decades B. C.) really wrote any Yi lin seems very doubtful. Neither of them is mentioned in connection with such a work in Liu Hin's catalogue (Han shu, I wen chi). King Fang has a long and Fei Chī a short biography in the Han shu, but nothing is said there of any Yi lin. The probability is that the works seen by the Suei shu writer are of later date and falsely attributed to King and Fei. Be this as it may: the list of Yi lin works in Suei shu is very valuable to us; for it shows that, out of all those works current in Suei time and T'ang time under the name of Yi lin, those attributed to King Fang, to Fei Chī, to Hü Tsün, to Kuo P'o etc., none was identical with our present Yi lin, for this one was coexistent with them all and was called the Yi lin of Tsiao Yen-shou.

And then we seize upon a highly significant fact: there is *one* Yi lin, known through an early source (Tung kuan Han ki via Hou Han shu), that of Ts'uei Chuan, of Wang Mang's time, which does *not* occur in the literary chapter of the Suei shu. This may be because it was lost; but it may equally well be that it does not occur separately because it was identical with the Yi lin loosely attributed to Tsiao Yen-shou!

Let us see how this latter alternative would tally with the facts we know. That the present Yi lin is a Han time work (in spite of Ku Yen-wu's guess that it was written by somebody »after Eastern Han time«) follows clearly from its rime

<sup>1)</sup> That the present Yi lin is really the one seen by the Suei shu writer and by him attributed to Tsiao Yen-shou, there can be no doubt; its existence can be followed from that time down to our own day.

system, examined above, which is decidedly archaic and cannot be attributed to Liu ch'ao times. Moreover, this is happily confirmed by the narrative of the Tung kuan Han ki quoted above, which shows that it existed, in its present arrangement, in 62 A. D. On the other hand it contains stanzas that possibly allude to incidents in Yüan-ti's (48—33) and Ch'eng-ti's (32—7) times. This, if taken seriously, narrows down the possible time for its composition to a few decades; and Ts'uei Chuan wrote his Yi lin (in 64 chapters like our present text) exactly in that time, *viz.* in Wang Mang's time (9—23 A. D.).

Let us sum up: if we were to accept the tradition given by Suei shu, that our Yi lin was written by Tsiao Yen-shou in Suan-ti's time, we should have to shut our eyes to the fact that neither Liu Hin nor Pan Ku knows anything about such a work by him, though Liu extensively treats the Yi literature of the 1st cent. B. C., and though Pan Ku has much to say about Tsiao as teacher of King Fang. And we shall have to reckon with some or at least one certain interpolation after Tsiao Yen-shou's time. On the contrary, if we accept our present work as identical with the one undoubtedly written under the title Yi lin in Wang Mang's time by Ts'uei Chuan, all difficulties disappear but one: to account for the origin of the tradition which connects the work with Tsiao Yen-shou. And here, I think, the narrative of the Tung kuan Han ki quoted above gives the key. For it is stated there that Prince Hien, who was fond of King's (King Fang's) Yi, was appealed to for an explanation of a passage in our Yi lin. King Fang was, as stated above, a pupil of Tsiao Yen-shou. Tsiao was thus really the originator of the King school of the Yi, and it was but natural to guess that Prince Hien, an adherent of this school, was appealed to because the Yi lin quoted derived from Tsiao Yen-shou.

This very indirect connection between Tsiao and our Yi lin, however, should no longer lead us astray. The choice between Tsiao and Ts'uei is easy: our Yi lin is a work of Wang Mang's time, written by Ts'uei Chuan.

On the other hand it is not necessary to place an absolute barrier between Tsiao and Ts'uei. According to the Han shu (k. 88 p. 5) Tsiao Yen-shou *tu té yin shi chī shu* «alone was in possession of the lore of the recluses», and it is quite possible that the prognosticating practices and literary products in this line connected with the Yi during the Eastern Han epoch largely followed up ideas already propounded by Tsiao Yen-shou. Ts'uei Chuan, just as well as King Fang, would then be one of Tsiao's followers. It is, of course, impossible to know anything definite on this point.



# TUBES ET BOUTONS CRUCIFORMES TROUVÉS EN EURASIE

PAR

*OLOV JANSE*

Nous avons déjà eu l'occasion d'attirer l'attention sur un groupe de tubes cruciformes qui se rencontrent en Extrême-Orient<sup>1)</sup> et qui affectent parfois les mêmes formes que des monuments analogues trouvés en Europe, où ils caractérisent la civilisation de Hallstatt, qui a probablement commencé vers l'an 1000 ou un peu plus tard et qui a dû subsister dans l'Occident jusque vers l'an 400 avant J.C.<sup>2)</sup> Nous avons acquis la certitude qu'un examen plus détaillé de ces monuments peut contribuer à éclairer quelques problèmes qui ont trait aux relations ayant jadis existé entre l'Extrême-Orient et l'Occident. Voilà pourquoi nous avons cru utile de revenir ici sur le problème des tubes et boutons cruciformes.

Etudions d'abord les tubes trouvés en Extrême-Orient en prenant pour base de cet examen les monuments de ce genre qui ont été réunis au Musée des Antiquités d'Extrême-Orient à Stockholm, Pl. I: 2—6, II: 1—7, III: 1—3 et fig. 1, 8. La plus grande partie de ces objets ont été collectionnés en Chine par M. Orvar Karlbeck.

Parmi ceux-ci nous pouvons distinguer, grossso-modo, deux groupes, l'un localisé notamment dans les provinces du Hupei, du Honan, du Kiangsu, de l'Anhui et dans la vallée du Huai-ho; l'autre appartient principalement à la Chine du Nord et à la Mongolie.

Les monuments du premier groupe sont presque tous décorés dans le style Chou; ceux du second groupe sont pourvus d'un décor qui, en partie, est conçu dans le style animalier eurasiatique. Le décor se trouve toujours sur la face antérieure. Disons d'abord un mot des monuments du premier groupe.

La face postérieure de ceux-ci est pourvue d'une ouverture, le plus souvent rectangulaire, Pl. I: 3 b, 4 b, etc., rarement ronde, fig. 1, triangulaire ou en forme de croix, Pl. I: 6 b.

La plupart de ces monuments sont en forme de croix grecque, Pl. I: 3—6, II: 1—2, etc., mais il en existe des exemplaires du type de la croix de Saint-André, Pl. II: 4, 6; ceux-ci ont parfois les bras légèrement incurvés, Pl. II: 5. Quelques pièces n'ont que des bras rudimentaires (cf. p. 188, 190, 191, 197). Il existe ensuite des tubes à trois bras (all. Gabelkreuz) du type Pl. II: 7.

<sup>1)</sup> *Bulletin of the Museum of Far Eastern Antiquities*, t. II, p. 180 sqs.

<sup>2)</sup> En ce qui concerne la civilisation de Hallstatt voir J. Déchelette, *Manuel d'archéologie préhistorique, celtique et gallo-romaine*, t. II: 2 (Paris, 1913). Dans cet ouvrage l'auteur cite les publications les plus importantes qui traitent de la civilisation de Hallstatt. Cf. aussi A. Mahr, *Die prähistorischen Sammlungen des Museums zu Hallstatt* (Wien 1914).

Aucun de ces monuments ne provient de fouilles systématiques et malheureusement nous ignorons aussi, à une exception près (cf. p. 208), dans quelles conditions ils ont été trouvés.

L'ornementation comporte des têtes d'animal stylisées ou des masques de t'ao-t'ie, fig. 1, 8, Pl. I: 3, 6, Pl. II: 1, 4, 6, 7; des cicadas, Pl. I: 4, II: 2, 3; des cornes stylisées (?) Pl. I: 5 et des bourrelets, Pl. II: 5 (cf. aussi p. 209).

Parmi ceux qui reproduisent une tête d'animal, — toujours vue de face —, signalons d'abord celui qui est reproduit ici, Pl. I: 6 a. La tête est pourvue de cornes. Elles sont stylisées mais nous pouvons néanmoins les distinguer nettement. Le mufle est pourvu de deux bourrelets (cf. aussi la pièce reproduite ici, Pl. II: 4 a). De chaque côté du mufle se voit une "goutte" en relief qui doit représenter les coins de la gueule. Au point de vue technologique cette tête dérive probablement de têtes, analogues à celles qui se voient sur deux objets en marbre, trouvés à An-Yang et appartenant peut-être à la dynastie des Yin (env. 1200—1000). Ce sont deux têtes de capridés,<sup>1)</sup> qui ornent des objets à destination incertaine, peut-être des récipients ou des *ts'ung*. Ce rapprochement est d'autant plus plausible que le style Chou dérive du style Yin.

Sur plusieurs tubes cruciformes nous voyons un motif analogue à celui qui orne le monument reproduit Pl. I: 6, mais à la place des cornes nous voyons des "oreilles" stylisées. Celles-ci ont parfois la forme d'un cercle ouvert, Pl. II: 1, ou d'un cercle fermé. Parfois les "oreilles" sont presque cardiformes, Pl. I: 3 a, II: 4 a. Il existe quelques masques de ce modèle qui sont ornés dans leur milieu, d'un carré,<sup>2)</sup> Pl. I: 3 a. Nous le voyons parfois sur d'autres têtes ou masques, attribués à l'époque des Chou (p. ex. fig. 12). M. Voretzsch reproduit (*Altchinesische Bronzen*, fig. 37) des têtes analogues qui ornent un tripode en bronze. Celles-ci reproduisent dans l'imagination chinoise le *k'uei*, c'est-à-dire "le morse"! (Voretzsch, *Op. cit.*, p. 107). Ne serait-ce plutôt une tête de capridé stylisée? (Cf. Sirén, *Op. cit.*, Pl. 59 G.) Ajoutons que le carré dont nous venons de parler est un motif qui se voit aussi sur des masques de t'ao-t'ie appartenant vraisemblablement à l'époque des Yin (cf. O. Sirén, *Op. cit.*, t. I, Pl. 14: B).

Le décor des deux pièces, reproduites ici fig. 1 et Pl. II: 6, diffère considérablement du décor de celles que nous avons déjà étudiées. Le monument fig. 1 se distingue par le haut relief et par la place prédominante que tient le décor, comparé aux tubes qui ne sont que rudimentaires.

<sup>1)</sup> Cf. O. Sirén, *A History of Early Chinese Art*, t. I, Pl. 14 A, 15 A et p. 14. Le mufle d'une d'elles (Pl. 15 A) est aussi pourvu de bourrelets.

Il est curieux de constater la place prédominante que tient dans le style Chou la reproduction, parfois très stylisée, d'un masque ou d'une tête de capridé. Nous trouvons ce motif, non seulement sur les vases rituels, mais aussi sur les tubes cruciformes et sur d'autres pièces de harnachement. Peut-être ce motif a-t-il joué quelque rôle dans la création du t'ao-t'ie?

<sup>2)</sup> Il y a aussi des reproductions de cicadas, ornées de ce carré, p. ex. Voretzsch, *Op. cit.*, fig. 5 (époque des Chou).

L'ornementation de l'autre pièce, en bas relief et en partie presque effacée, semble se rapprocher, dans une certaine mesure, du style dit Ch'in [cf. p. ex. Sirén, *Op. cit.*, Pl. 79 (à droite dans le bas de la planche)].

Parmi les tubes cruciformes ornés d'une cicada, il y en a qui sont conçus dans un style assez naturaliste. Nous en reproduisons un ici Pl. I: 4 a, dont les tubes sont relativement grands. Il est probable que les monuments de ce type sont plus anciens que ceux qui sont ornés d'une cicada plus stylisée, comme p. ex. celui de la Pl. II: 3, dont l'un des tubes a épousé la forme triangulaire de l'arrière-train de la bête.

Quant aux spirales en relief du type Pl. I: 5, nous avons lieu de nous demander si elles ne doivent pas être comparées aux cornes stylisées d'animaux du type Koop, *Early Chinese Bronzes*, Pl. 55: b (à droite). Ajoutons que l'on rencontre parfois des spirales en relief sur des pièces de harnachement chinois (M. A. E. O., n:o 11034: 59) et sur une garniture terminale de timon (?) chinois (M. A. E. O., n:o 10599: 255).

Il existe aussi un type de tubes cruciformes, orné d'un disque bombé, perforé au milieu d'un trou, encerclé d'un fin bourrelet (cf. p. 208). Ce sont des monuments qui, au point de vue de style, peuvent être rapprochés de certaines pièces discoïdes de harnachement (M. A. E. O., n:o 10599: 418, a).

Voilà pour les tubes cruciformes du premier groupe. Passons maintenant à ceux du second.

Un motif décoratif des plus fréquents est, ici aussi, destiné à reproduire des capridés ou des têtes de ces animaux.

Sur le tube cruciforme, Pl. III: 1 nous voyons la reproduction de deux têtes de capridés vues de profil. Celles-ci sont conçues dans le style dit nomade. Leurs mufles sont reliés ensemble par une corde.

Le tube Pl. III: 2 est orné d'un décor qui, à première vue, semble destiné à reproduire une tête de bovidé, mais il a ceci de particulier: les cornes présentent à peu près la même courbe que celle des cornes de capridés dont nous venons de parler; la tête est extrêmement large et au dessous de chaque corne nous voyons deux "yeux" ronds, en creux; les oreilles, très frustes, semblent faites d'une ligne cardiforme à extrémités ouvertes. Les narines, chacune en forme d'un trou rond, se trouvent aux extrémités d'un large bourrelet. Peut-être s'agit-il primitivement de deux têtes de capridés qui se seraient transformées en masque de bovidé?<sup>1)</sup>

Etant donné le fait qu'il est impossible de suivre les divers stades d'une telle évolution, faute de matériaux, nous n'osons émettre cette hypothèse que sous toute réserve. Mais, si notre raisonnement est admissible, la forme des cornes et l'existence des deux paires d'yeux (dont l'une dériverait des oreilles des capridés) s'expliqueraient facilement.

<sup>1)</sup> Dans le style zoomorphe dit vieux-germanique, il existe des exemples où deux corps d'animaux sont composés ensemble de façon à former en même temps une tête ou un masque d'animal. Cf. B. Salin, *Die altgerm. Thierornamentik*, fig. 593, p. 269.

Il y a aussi des tubes cruciformes qui portent des bourrelets disposés en cercles concentriques (Pl. I: 1). La pièce reproduite ici Pl. I: 2 est ornée d'une zone striée qui encercle un champ uni, légèrement bombé. Nous rencontrons ces mêmes motifs sur d'autres pièces de harnachement discoïdes, chinoises, p. ex. M. A. E. O., n:o 10599: 418 a et O. Sirén, *Op. cit.*, Pl. 68 B (rondelle bombée; dans le haut, au milieu de la planche).

Toutes ces pièces ont des tubes à coupe circulaire, mais il y en a aussi qui ont des tubes à coupe rectangulaire, à en juger par celle, reproduite Pl. III: 3 et que le Musée vient d'acquérir. Elle est particulièrement intéressante, non seulement à cause de son décor, mais aussi à cause de sa forme. Celui-là couvre une surface discoïde et reproduit un bouquetin en relief, vu de profil et dont le corps est enroulé. La zone qui entoure la partie décorée est légèrement inclinée. Les tubes sont rudimentaires. L'ouverture qui se trouve de l'autre côté est ronde, assez large et bordée d'une mince strie.

Nous ne savons pas comment ont été utilisés les monuments dont nous venons de parler, mais nous avons lieu de supposer que ce sont, du moins primitivement, des accessoires de harnachement.

Tel a parfois été le cas pour des monuments analogues, trouvés en Europe (cf. p. 194). En outre la plus grande partie des petits bronzes chinois, conçus dans le style Chou, parvenus jusqu'à nous, ont servi comme pièces de harnachement ou comme garnitures de char (O. Sirén, *Op. cit.*, p. 43, 44). Mais, si les tubes cruciformes ont eu primitivement une fonction purement utilitaire, ils ont pu devenir ultérieurement, comme cela a été le cas en Europe (cf. p. 195), des objets de parure ou des amulettes.

Puisque les tubes cruciformes ont été utilisés comme pièces de harnachement, n'est il pas étonnant que le décor de ces bronzes représente la plupart du temps des capridés ou des motifs qui vraisemblablement ont pour prototype des reproductions d'animaux de cette famille, mais, par contre, aucune reproduction de cheval. Ce phénomène n'est évidemment pas dû au pur hasard, mais dans l'état actuel de nos connaissances, il n'est pas aisé de trouver une explication satisfaisante.

La tête de capridé était à l'époque des Chou un motif décoratif très répandu et n'avait peut-être alors, du moins parfois, qu'une fonction purement ornementale. Signalons à ce propos que la corne des capridés a pu jouer un certain rôle dans la formation et l'évolution des mors de chevaux de l'époque des Chou. Si tel a été le cas, des capridés ou des cornes de ces animaux ont pu être utilisés comme motifs décoratifs pour d'autres pièces de harnachement, p. ex. pour les tubes cruciformes.

Il n'est pas encore possible de dire avec exactitude jusqu'à quelle époque les tubes cruciformes ont été employés en Chine et en Mongolie, mais étant donné le fait qu'aucun d'eux ne peut être assigné avec certitude à l'époque des Han, nous avons lieu de penser que c'était déjà vers la fin des temps de la dynastie des Chou

que l'usage de ces monuments était tombé en désuétude. Mais ont-ils disparu sans laisser des descendants? Nous ne le pensons pas et voici pourquoi.

Il existe un certain nombre de boutons du type Pl. III: 4 qui proviennent probablement de la vallée du Huai-ho. Nous devons les comparer à la pièce reproduite ici, Pl. III: 3. Le bouton Pl. III: 4 est dépourvu de tubes. A la place de ceux-ci il y existe quatre ouvertures rectangulaires. L'ouverture de la face postérieure est ronde. La face antérieure est décorée en bas relief de la façon suivante. Au centre nous voyons quelques minces bourrelets circulaires dont l'un perlé. Le plan incliné est divisé en trois zones. Celle du milieu est ornée de lignes courbes et en partie spiriformes. Chacune des deux autres zones est ornée d'une tresse à doubles lignes. C'est un décor qui est conçu dans un style qui se rapproche de celui qu'on dénomme Ch'in. Ce décor doit appartenir à une période qui comprend la dernière phase des temps des Chou et le commencement de l'époque des Han. Par conséquent le bouton, Pl. III: 4 doit dater des environs du III<sup>e</sup> siècle avant J.-C.

Le Musée des Antiquités d'Extrême-Orient possède ensuite quelques boutons du type Pl. III: 5 qui proviennent de la vallée du Huai-ho, du Kiangsu ou de l'Anhui du Nord. Ils ont exactement la même forme que celle des boutons du type Pl. III: 4, mais ils sont dépourvus de décor. Les pièces de ce type forment le trait d'union entre les tubes cruciformes du type Pl. III: 3 et les boutons du type Pl. III: 6, 7, 9—11, acquis à Kuei-hua-ch'êng (Sui-yüan) et provenant vraisemblablement du désert d'Ordos. Le bouton, Pl. III: 11 possède encore des rudiments de tubes.

Si l'opinion que nous venons d'exprimer est admissible, nous avons lieu de supposer que, dans l'évolution technologique de ces monuments, les bras tendent, peu à peu, à disparaître ou à se transformer en tubes à coupe rectangulaire.

Voilà pour les tubes cruciformes de la Chine et de la Mongolie.

Tournons maintenant nos regards vers la Sibérie et nous constaterons qu'il y existe aussi des tubes cruciformes. Nous en connaissons plusieurs (Pl. IV: 5, 9 et Fr. Martin, *L'âge du bronze au Musée de Minoussinsk*, Pl. 31: 8) qui proviennent de la région de Minoussinsk. Ils sont tous dépourvus de décor. Aussi bien la croix grecque que celle du type dit de Saint-André y sont représentées. D'après ce que m'a indiqué Mlle V. Levaschova<sup>1</sup>), du Musée de Minoussinsk, on ignore si ces pièces ont été trouvées isolément ou si elles étaient accompagnées d'autres objets. (Cf. notre liste p. 205.)

Les tubes cruciformes sont ensuite représentés au Caucase, Pl. IV: 10, 11, a, b. Je n'en connais que deux exemplaires qui, eux, proviennent, un de la vallée du Tchégem, l'autre de la vallée du Baksan (en Kabardie).<sup>2</sup>) Le Baksan et le Tchégem

<sup>1</sup>) Lettre du 31 octobre 1930.

<sup>2</sup>) Selon une communication orale du docteur Fr. Martin (Settignano) qui a voyagé au Caucase, il existe des tubes analogues ailleurs que dans les vallées du Baksan ou du Tchégem, mais d'une façon générale, les archéologues et les collectionneurs n'ont pas pris soin d'étudier

sont des affluents de la rivière du Terek qui prend naissance dans la région d'Elbruz et qui se jette dans la mer Caspienne, après avoir traversé une partie de la steppe de Nogai.

Les tubes cruciformes sont fréquents dans l'Europe centrale et dans les Balkans jusque dans la Bulgarie (cf. notre liste p. 206 sqs).



Fig. 1. Tube cruciforme, vu de trois faces, provenant probablement du Honan, Chine. Musée des Antiquités d'Extrême-Orient, n:o 11276: 80. Grandeur  $\frac{1}{2}$ .

Ils manquent complètement en Italie. Nous avons eu l'occasion de visiter un assez grand nombre de Musées en Italie depuis Trieste jusqu'à Naples, mais nul part nous n'en avons pas vu. Or, il est d'un certain intérêt de constater qu'il existe dans l'industrie hallstattienne des produits qui n'ont aucun rapport avec l'industrie italique, mais qui, par contre, ont de grandes affinités avec des monuments analogues trouvés en Asie.

Un examen des tubes cruciformes trouvés en Europe peut être motivé ici, surtout à titre de comparaison. Beaucoup de ces pièces proviennent — à l'encontre de celles qui ont été trouvées en Asie — de fouilles systématiques qui, elles, nous permettent parfois d'assigner ces monuments à une période déterminée et de les placer dans leur juste milieu.

En Europe ils appartiennent à la dernière phase de l'époque de Hallstatt. Selon le Docteur E. Beninger<sup>1</sup>), conservateur-adjoint du Naturhistorisches Hofmuseum (Wien) et qui prépare actuellement un ouvrage sur les trouvailles de la nécropole de Hallstatt, les plus anciens tubes cruciformes remontent au VIII<sup>e</sup> siècle avant J.-C. Je n'en connais aucun qui puisse être assigné à l'époque de la Tène. Il est probable que l'usage de les porter a tombé en désuétude, en Europe, au cours du V<sup>e</sup> siècle avant J.-C. Comme nous le disons plus loin, p. 200, ils réapparaissent en

et de publier ces objets. J'espère néanmoins que les savants qui ont l'occasion de faire des recherches au Caucase ne manqueront pas d'étudier ces tubes cruciformes qui peuvent servir, en quelque sorte, de "fossils directeurs" pour nos recherches concernant la *via regia* de l'Eurasie. Il serait intéressant de chercher si les tubes cruciformes ne se retrouvent pas aussi dans l'Asie centrale.

<sup>1)</sup> Communication orale.

Europe à l'époque des invasions. Ceci semble prouver qu'ils ont subsisté quelque part en Asie au moins jusqu'à cette époque.

Nous ignorons s'il existe des tubes cruciformes métalliques, trouvés dans l'Europe occidentale, mais nous connaissons d'après la littérature une petite masse bi-cruciforme de terre cuite<sup>1)</sup> provenant de Castel-Roussillon (Pyrénées-Orientales). Selon le Docteur A. Guébhard<sup>2)</sup>, cet objet "constitue l'assemblage symétrique en triple pénétration orthogonale de trois petits cylindres massifs de terre cuite finement micacée, de 0 m. 055 de longeur et 0 m. 014 environ de diamètre moyen, se recoupant dans l'espace à la manière des axes coordonnés classiques de la géométrie à trois dimensions, grossièrement façonnés et percés, plus ou moins imparfaitement, de trous, les uns axillaires, les autres axiaux, dont la destination demeure d'autant plus énigmatique que plusieurs d'entre eux sont borgnes". — — —

"Il se pourrait même qu'il fut un simple héritage de l'époque hallstattienne, car on trouve quelque chose d'analogique, mais plus soigné, et même décoré de gravures, provenant de Hallstatt même, figuré dans le *Musée préhistorique* de G. et A. de Mortillet, fig. 1250."<sup>3)</sup>

Une autre pièce analogue provient de Somme-Vesle (Marne).<sup>4)</sup>

Les deux objets ont été trouvés en milieu gallo-romain.

Selon M. Léon Coutil il y a dans "les vitrines du Hallstattien du Musée archéologique de Mayence" une autre pièce, semblable au précédent et en terre cuite (n:o 2936).<sup>5)</sup> Ajoutons que le Musée de Wiesbaden en possède deux autres (n:os 13195 et 162141). Cf. aussi plus loin, p. 208.

En général les tubes cruciformes trouvés en Europe sont unis; parfois ils sont pourvus de quelques légères rainures qui se trouvent près de l'extrémité des bras, Pl. IV: 1. A l'endroit où ceux-ci se croisent nous voyons parfois un renflement conique ou hémisphérique, p. ex. Pl. IV: 7 a, parfois une rondelle plate, ornée de deux rainures qui se croisent à angle droit à leur milieu. Dans le champ qui se trouve à l'endroit où les bras se croisent il existe parfois quelques bourrelets en forme d'anneaux concentriques, Pl. IV: 1 et fig. 2: b, etc.

Quelques tubes sont pourvus dans l'une de leurs extrémités d'un appendice en forme de croissant, Pl. IV: 2.

Un exemplaire provenant de Kisköszeg, Hongrie, reproduit ici, fig. 2: a, est encerclé (= la rouelle solaire) et pourvu à l'endroit où les bras se croisent d'une

<sup>1)</sup> *Bulletin de la Soc. Préhistorique Française*, t. VIII (1911), p. 636, t. XVI (1919), p. 320, (1921), p. 57 sqs, fig. 1 et *Bulletin de la Soc. nationale des antiquaires de France*. Séance du 3 déc. 1919, 7 janv. 1920.

<sup>2)</sup> *Bulletin de la Soc. nationale des antiquaires de France*. Séance du 3 déc. 1919.

<sup>3)</sup> = E. v. Sacken, *Das Grabfeld von Hallstatt in Ober-Österreich und dessen Alterthümer* (Wien 1868), Pl. XVIII, fig. 6 a.

<sup>4)</sup> *Bulletin de la Soc. nationale des antiquaires de France*. Séance du 3 déc. 1919.

<sup>5)</sup> *Bulletin de la Soc. Préhistorique Française*, (1921), p. 58, note 5.

sphère ajourée (en forme de grelot). Quelques appendices en forme de tête d'oiseau sont suspendus à cette sphère.

Presque tous les tubes cruciformes trouvés en Europe que nous connaissons sont à quatre bras, mais le type à trois bras y est aussi représenté, fig. 7.

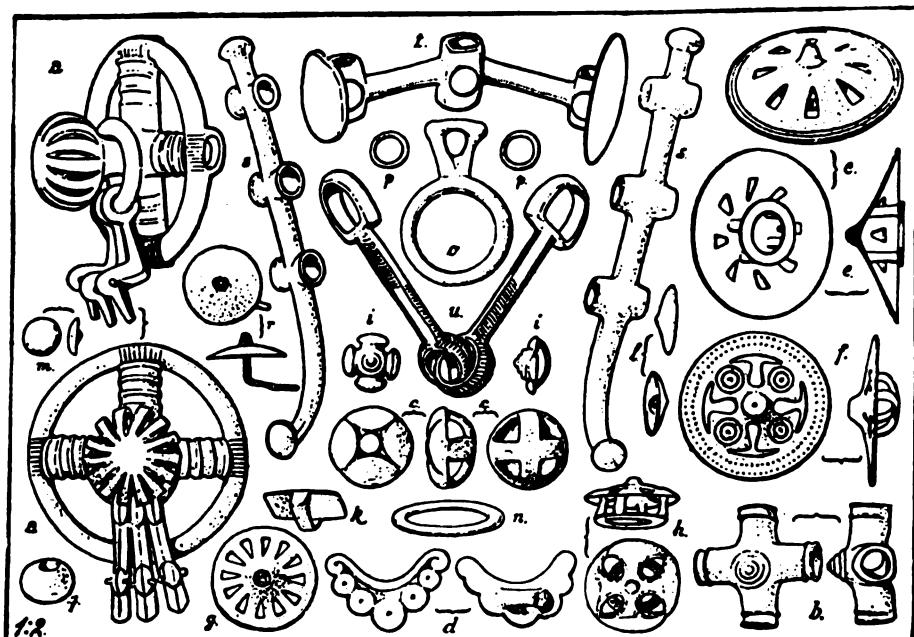


Fig. 2. Divers objets découverts à Kisköszeg, Hongrie. D'après *Mainzer Zeitschrift*, 2: ème année, p. 42, fig. 5. Grandeur  $\frac{1}{2}$ .

Les tubes cruciformes de provenance connue semblent en général avoir été trouvés dans des sépultures.

Primitivement les tubes cruciformes ont peut-être été, comme nous l'avons dit, d'un usage utilitaire, p. ex. pour retenir deux ou plusieurs courroies de harnachement à l'endroit où elles se croisent. Nous connaissons quelques cas où des tubes cruciformes ont été trouvés associés à des pièces de harnachement. Signalons à ce propos une trouvaille faite dans une sépulture à Pullach (Munich), publiée par J. Naue qui en dit:<sup>1)</sup> "Neben und hinter den Bronzetreissen lagen in Kreuzform eine Anzahl Bronzestücke, welche auf jeden Fall vom Riemen- und Lederzeuge des Pferdegeschirres, — vielleicht von demjenigen welches die Köpfe der beiden Pferde bedeckte — herrührten; dieselben bestehen aus hohl gegossenen, kreuzförmig gestellten kurzen Röhren, die in der Mitte durch einen, sich nach oben verjüngenden, runden Buckel organisch

<sup>1)</sup> *Die Hügelgräber mit dem Fürstengrabe bei Pullach (München)* in *Beiträge zur Anthropol. u. Urgesch. Bayerns* (München, 1884), t. V, p. 259. Cf. Pl. XV: 8, 9, 10 *ibid.*

abschliessen; mit diesen kreuzförmigen Verzierungsstücken sind an den vier Seiten derselben vier röhren-förmige, nach oben und unten offene Bronzetheile durch schmale runde Lederrriemen verbunden, welche sich in dieser Verbindung noch bei einigen Exemplaren erhalten haben. Der Vordertheil dieser Röhren ist mehrfach gerippt, die Rückseite in der Mitte offen. Die so gebildeten, beweglichen Kreuze dienten wahrscheinlich als Verzierungen der Kreuzungspunkte jener erwähnten Leder- oder Riemenzeuge, wie an den Schläfen und an den Seiten oberhalb des Gebisses."

De toute façon, il ne fait pas de doute qu'au moins un des tubes cruciformes de Pullach a fait partie d'une ceinture ayant appartenu au harnachement (cf. fig. 3). Il n'est pas possible d'établir s'il a rempli ici une fonction purement ornementale, s'il a été employé comme amulette ou s'il a été d'un usage utilitaire.

Il existe, en effet, un certain nombre de tubes cruciformes qui n'ont pas été d'un usage utilitaire. C'est certainement le cas d'une croix en terre cuite et perforée seulement dans un seul sens.<sup>1)</sup> Elle a été trouvée dans une sépulture à squelette (N:o 603) à Hallstatt et dont le mobilier funéraire comporte une fibule à spirales (all. Brillenfibel), une fibule à navicella, une agrafe de ceinture, un anneau en bronze et des perles en ambre jaune.

La croix de Kiskőszeg que nous avons reproduite, fig. 2: a, nous fait penser à une amulette en forme de rouelle solaire.

Il existe au Naturhistorisches Hofmuseum (Wien) 7 tubes cruciformes trouvés *in situ* dans la grotte de Býčískála (Moravie) et qui ont appartenu à une pendeloque (fig. 4). Celle-ci avait été déposée près du bassin d'un squelette masculin. H. Wankel en dit:<sup>2)</sup> "Überhaupt waren auch die einzelnen Bestandtheile dieses Schmuckes durch Kupferoxyd so fest aneinander gekittet, dass die ursprüngliche Form und Anordnung der einzelnen Theile leicht wieder hergestellt werden konnten."

"Das Gehänge besteht aus einer 19 Centimeter grossen, mit getriebenen, konzentrischen Ringen gezierten Scheibe, von welcher schurzartig sieben durchbrochene Stäbchen herabhängen, die mit horizontal liegenden, aus kleinen Ringelchen bestehenden Schnüren verbunden werden. Den unteren Rand des Gehänges säumt ein reiches, plastisches Ornament ein, bestehend aus sieben nebeneinander liegenden Kreuzen, an denen wieder sieben gitterartig durchbrochene viereckige Platten, die mit sieben hohlen, durchgebrochenen Breloques abwechseln, hängen. An den Ohren dieser Platten und Breloques sind Klapperbleche angebracht, die wie Fransen den unteren Rand des Schurzes einfassen."

Rappelons-nous ensuite que plusieurs tubes cruciformes du type Pl. IV: 2 sont pourvus d'un appendice en forme de croissant. L'association ici des deux motifs qui ont chacun un sens religieux très répandu n'est pas dépourvu d'intérêt.

<sup>1)</sup> Voir E. v. Sacken, *Das Grabfeld von Hallstatt in Ober-Österreich und dessen Alterthümer*, Pl. XVIII: 6 a. Cf. G. et A. de Mortillet, *Le Musée préhistorique*, (Paris 1888), Pl. C, fig. 1250.

<sup>2)</sup> *Bilder aus der mährischen Schweiz und ihrer Vergangenheit*, (Wien 1882), p. 403.

L'opinion que nous avons exprimée ici et selon laquelle les tubes cruciformes, après avoir rempli une fonction utilitaire, sont devenus des amulettes ou des garnitures de ceinture, peut-être d'un caractère magique, n'a rien d'absurde. Nous avons de nombreux exemples d'objets qui, après avoir servi dans la vie quotidienne, sont devenus des amulettes ou des porte-bonheur. Je ne cite ici que le fer à cheval qui encore de nos jours, assez souvent, est placé en Suède au dessus de l'entrée d'une maison comme porte-bonheur.

En étudiant les tubes cruciformes, trouvés en Extrême-Orient, nous avons déjà pu constater que ceux-ci donnent naissance à des boutons simples, bombés et pourvus de quatre ouvertures latérales (cf. p. 191 et Pl. III: 4—7, 9—11). Des boutons analogues se rencontrent aussi dans l'Occident. Nous en reproduisons deux ici, trouvés, l'un en Russie à Bevodnaja (gouvernement de Viatka), Pl. III: 12 et l'autre à Hallstatt (Autriche), Pl. III: 8. Les boutons de ce type sont aussi représentés à Minoussinsk (Sibérie centrale), fig. 9: 4.

Signalons aussi à ce propos qu'il existe dans la Russie du Sud et en Hongrie des boutons en os et en bronze qui sont pourvus de quatre ouvertures. Parfois ils sont unis, parfois ornés d'une tête de capridé ou d'oiseau cornu (fig. 9: 1, 2). Ce sont des pièces de harnachement qui ont été trouvées plusieurs fois *in situ*, près du crâne des chevaux. Elles appartiennent au milieu du premier millénaire avant J.-C. [Cf. N. Fettich, *Beiträge zum Entstehungsproblem des altgermanischen II. Stiles* (Budapest, 1929), fig. 33: c, 34, Pl. XVII: 38, 39]. Ce sont peut-être des pièces qu'il faudra comparer aux boutons des types Pl. III: 9—11.

Si les tubes cruciformes se sont développés de la manière que nous venons d'esquisser, ils ont dû, dans leur évolution, suivre aussi une autre ligne: ils sont devenus des croix plates du type Pl. II: 8—9 et fig. 6, 9: 3.

C'est surtout en étudiant les matériaux archéologiques de l'Europe centrale que nous pouvons suivre, pas à pas, cette évolution qui a dû commencer à la fin de l'époque de Hallstatt. Dans une sépulture découverte à St. Veit (Carniole), Yougo-Slavie et datant du VI<sup>e</sup> ou du V<sup>e</sup> siècle avant J.-C., le mobilier funéraire comporte, entre autres choses des tubes cruciformes et des boutons cruciformes (Museum für Völkerkunde, Berlin, Salle n:o 12, vitrine n:o 5). Il existe des nécropoles, comme p. ex. celle de Glasinac (Bosnie), où les tubes cruciformes, de même que les boutons cruciformes, sont extrêmement nombreux (Musée de Sarajévo). Les formes de transition sont fréquentes et il ne peut, selon nous, persister aucun doute possible sur la parenté entre les tubes cruciformes du type Pl. IV: 1 et les boutons cruciformes des types Pl. II: 8—9 et fig. 6, 9: 3.

Il existe quelques croix, analogues aux tubes cruciformes, mais *massives* et pourvues d'une tige arquée sur l'une des faces, à l'endroit où les bras se croisent.

Deux pièces de ce type ont été trouvées dans la station de Velem St Vid près

Güns (Hongrie). L'une d'elles est reproduite ici Pl. IV: 6 a, b. Elles sont actuellement conservées au Komitatstmuseum à Szombathely (Hongrie).<sup>1)</sup>

Une autre pièce analogue à celles-ci, Pl. IV: 4 a, b, actuellement conservée au Musée de Ljoubljana (Laibach)<sup>2)</sup>, provient du cimetière de Watsch (Carniole) Yougo-Slavie.

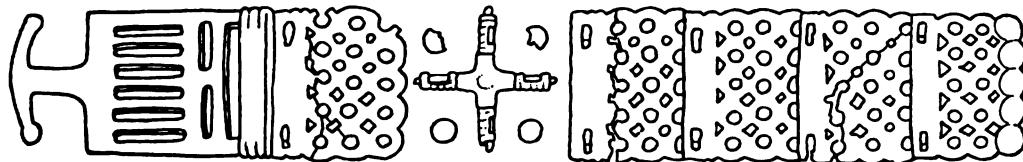


Fig. 3. Tube cruciforme et ceinture trouvés *in situ*. Pullach (Munich), Bavière. D'après J. Naue, *Die Hügelgräber mit dem Fürstengrabe bei Pullach in Beiträge zur Anthropol. und Urgesch. Bayerns* (München 1884), t. V, Pl. XIV: 1. Grandeur env. 1/8.

Il est probable que ces monuments ont été utilisés de même que certains tubes cruciformes comme garnitures de ceinture.

D'autres croix sont légèrement bombées sur l'une des faces, plates de l'autre côté et pourvues d'une tige arquée, Pl. II: 8—9, fig. 2: i, 6, ou d'un anneau sur quatre pieds, Pl. IV: 8.

Notre Pl. IV: 3, reproduit un type qui peut-être représente une autre forme de transition. Des tubes il ne reste que quelques rudiments annulaires, un à chaque extrémité.

Parmi les boutons cruciformes du type Pl. II: 8, 9 etc., il y en a beaucoup qui sont pourvus de quatre ou cinq renflements hémisphériques, un au point où les bras se croisent, les autres aux quatre extrémités des bras. La plupart de ces pièces datent aussi du milieu du premier millénaire avant J.-C. et de l'époque de la Tène. On en voit beaucoup, p. ex. dans les musées de Sarajévo et de Zagreb (Yougo-Slavie).

Des objets analogues, utilisés comme pièces de harnachement, ont été trouvées dans la Russie du Sud. (Cf. N. Fettich, *Beitr. zum Entstehungsproblem des altgerm. II. Stiles*, p. 96). Ceux-ci appartiennent au V<sup>e</sup> siècle avant J.-C. et sont attribués aux Scythes.

Nous trouvons ce type de bouton aussi dans la Sibérie occidentale, p. ex. dans la région de Minoussinsk, fig. 9: 3 et Fr. Martin, *L'âge du bronze au Musée de Minoussinsk*, Pl. 31: 2.

Il est digne de remarque que les boutons cruciformes de ce type se retrouvent aussi au Caucase, en Mongolie et en Chine. Celui que nous reproduisons ici Pl. II: 10 provient probablement de Tsun-hua-hsien (Chihli), Chine du Nord. D'autres ont été trouvés à Hsuan-hua-hsien (Chihli), (Musée des Antiquités d'Extrême-Orient n:o 10143: 2).

<sup>1)</sup> Id 30 Vaskor id 201, 202.

<sup>2)</sup> Salle n:o 2, vitrine n:o 10, (carton n:o XIV: 5).

Plusieurs trouvailles montrent que les boutons cruciformes de même que les tubes cruciformes ont été employés — du moins parfois — comme garnitures de ceinture. Je ne cite ici que la ceinture, fig. 5, de Fokuru (Hongrie) où l'on



Fig. 4. Pendeloque. Grotte de Býčiskála (Moravie). D'après H. Wankel, *Bilder aus der mährischen Schweiz*, fig. p. 402. Grandeur 1/4.

voit des imitations de boutons cruciformes au repoussé. D'autres ceintures métalliques de l'époque de Hallstatt sont ornées de croix exécutées au pointillé.<sup>1)</sup>

Signalons aussi à ce propos que deux fibules zoomorphes en or, appartenant au trésor de Michalków (Galicie orientale)<sup>2)</sup> sont ornées d'imitations de boutons cruciformes (à quatre et à trois bras) exécutées au repoussé. Ce trésor contient aussi, entre autres choses, un diadème en or orné de croix à trois bras également exécutées au repoussé. La partie supérieure en est pourvue d'appendices en forme de croissants.

Il ressort de notre étude que les tubes et boutons cruciformes ont été d'un usage extrêmement répandu au premier âge du fer aussi bien en Europe qu'en Asie. Probablement un examen plus détaillé permettrait-il de reconnaître d'autres lieux

<sup>1)</sup> Voir p. ex. G. et A. de Mortillet, *Le Musée préhistorique*, Pl. C.

<sup>2)</sup> K. Hadaczek, *Złote skarby Michalkowskie*, Cracovie 1914, Pl. II: 1, III: 2, XI: 2. Cf. Ebert, *Reallexikon*, t. VIII, art. *Michalków*.

de trouvailles que ceux que nous avons indiqués et de suivre d'une façon plus nette l'évolution technologique de ces monuments.

Nous avons l'impression que les tubes et boutons cruciformes ainsi que d'autres



Fig. 5. Ceinture en or, décorée au repoussé. Fokuru (Hongrie). D'après une photographie communiquée par le Musée national de Budapest. Grandeur env. 1/4.



Fig. 6 a, b. Boutons cruciformes vus de deux faces. a) Schomlauer Berg, Autriche. D'après M. Hoernes, *Urgesch. der bild. Kunst* (III:e éd.), fig. 7; b) Stillfried, Autriche. D'après K. v. Dárnay, *Sílmegh és Vidéknék Öskora*, Budapest (1899), p. 71, fig. 23.

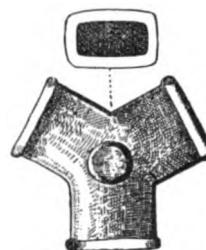


Fig. 7. Tube cruciforme à trois bras; coupe rectangulaire. Kiskőszeg, Hongrie. D'après *Archeol. Értesítő* (Budapest) 1905, p. 190. Grandeur 1/2.

objets (pointes de flèche gréco-scythes, certaines agrafes etc.) ont été fabriqués dans quelques centres métallurgiques comme p. ex. les régions de Hallstatt (Autriche), Glasinac, Jezerine (Yougo-Slavie), la vallée du Tchégem (Caucase), Minoussinsk (Sibérie), la vallée du Fleuve Jaune, etc. et que ces produits industriels ont été répandus le long de cette grande route eurasiatique qui jadis suivait les régions des steppes et qui, partant de la Hongrie, allait jusqu'en Chine, en traversant la Sibérie.<sup>1)</sup>

Les tubes et boutons cruciformes constituent dans l'industrie hallstattienne, de même que les pointes de flèche du type gréco-scythique, certains accessoires de harnachement<sup>2)</sup>, l'ivoire (à Hallstatt) etc., un élément important d'origine orientale. Peut-être ces éléments, en venant se greffer sur l'industrie hallstattienne, ont-ils joué un certain rôle dans l'évolution de l'industrie celtique?

<sup>1)</sup> Cf. J. G. Andersson, *Der Weg über die Steppen* in *The Bulletin of the Museum of Far Eastern Antiquities*, t. I, p. 11 sqs. Idem, *The High-Way of Eurasia* in *The American-Scandinavian Review*, Jan. 1931.

<sup>2)</sup> Il existe entre ceux-ci et des accessoires de harnachement trouvés en Extrême-Orient de très grandes similitudes.

Il existe en Europe des tubes cruciformes à coupe trapézoïdale et dont les bras se terminent en palmette stylisée, Pl. V: 1—3. Ces monuments appartiennent, comme nous l'avons dit,<sup>1)</sup> à l'époque des invasions. Il est curieux de constater que les monuments de ce type, après avoir disparu de l'Europe à la fin de l'époque de Hallstatt, y apparaissent de nouveau après un laps de temps d'environ 1000 ans. Certainement, les tubes cruciformes ont-ils subsisté plus longtemps en Asie qu'en Europe. Ils ont dû être réintroduits dans l'Occident par une ou plusieurs de

ces peuplades asiatiques qui envahirent l'Europe vers le milieu du premier millénaire après J.-C. Les tubes reproduits ici, Pl. V: 1—3, ont été déterrés dans l'oppidum de Novi Banovci (Yougo-Slavie) qui fut détruit à l'époque des invasions, probablement par une peuplade asiatique. De ce même oppidum proviennent les garnitures de ceintures, Pl. V: 4—8, ainsi que des objets

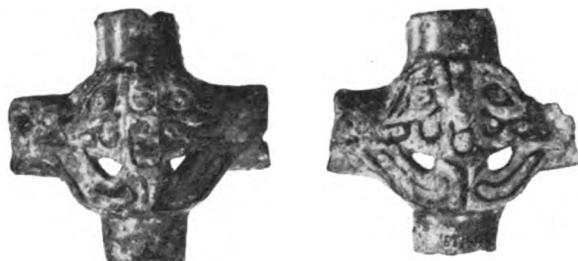


Fig. 8. Tubes cruciformes. Provenance présumée: Honan (Chine). Musée des Antiquités d'Extrême-Orient n:o 11276: 121, 122. Grandeur 1/1.

analogues à ceux que nous reproduisons ici Pl. V: 9—11.

Passons maintenant à la question: Pourquoi les tubes et les boutons cruciformes ont-ils été si fréquemment employés comme garnitures de ceinture? Selon nous elles ont été portées comme amulettes (cf. p. 195) et ont dû être fixées à certaines ceintures auxquelles on attribuait jadis une force magique.

Nous avons lieu de penser que les ceintures si fréquentes non seulement à l'époque de Hallstatt mais aussi à d'autres époques ont parfois eu un caractère magique. Rappelons nous à ce sujet que le dieu nordique Thor (le Taranis des Gaulois) se ceignait d'une ceinture afin d'augmenter sa force. Selon le *Skaldskaparmal* (35) le dieu mettait sa ceinture lorsqu'il voulait lancer son marteau.

Nous pouvons citer encore d'autres exemples en faveur du caractère magique de la ceinture. Ainsi p. ex. les *Sagas nordiques* rapportent que le futur héros Olov Geirstadaalv ne pouvait être mis au monde que lorsque sa mère s'est ceinte d'une ceinture magique. Citons ensuite le mythe, selon lequel Aphrodite tenait son charme invincible d'une telle ceinture (*l'Iliade* 14: 214 sqs).<sup>2)</sup>

Si notre opinion au sujet du caractère magique de la ceinture est admissible, nous avons lieu de penser que les ceintures qui se trouvent parfois dans les sépultures datant des temps protohistoriques ont un caractère magique et non utilitaire.

<sup>1)</sup> Cf. p. 192.

<sup>2)</sup> Je suis redevable au Docteur H. Jungner (Stockholm) d'avoir bien voulu attirer mon attention sur ce passage.

Cela explique certainement aussi la grande fréquence des garnitures et boucles de ceintures, agrafes etc. dans le mobilier funéraire en Eurasie.

Peut-être, ces monuments, ont ils été fabriqués, à certaines périodes, pour un usage posthume ou pour servir seulement dans des circonstances exceptionnelles? A ce propos nous avons lieu de mentionner le fait, sur lequel M. P. Pelliot a bien voulu attirer notre attention, qu'il n'existe aucune reproduction chinoise, ancienne, d'un personnage portant une agrafe ou un boucle de ceinture.

Si la reproduction intégrale ou partielle de capridés sur les tubes cruciformes a pu avoir un but purement ornemental, nous avons néanmoins lieu de nous demander si l'association de ces animaux et de la croix n'a pas eu primitivement un sens symbolique ou religieux. Cette même association est fréquente dans l'art ancien du Proche Orient. Nous retrouvons déjà ce motif sur la céramique de Suse (J. de Morgan, *Délégation en Perse*, t. XIII, p. 40, fig. 135).

Quand à la signification de la croix, elle-même, ne doit elle pas être considérée comme étant primitivement le symbole du principe masculin et féminin, c.-à-d. un symbole qui a trait à la création?

Si les tubes et boutons cruciformes ont eu parfois un sens magique ou symbolique en Europe, nous avons lieu de nous demander si cela n'a pas été le cas aussi en Extrême-Orient. Mais évidemment, il est difficile de l'établir avec certitude. La question reste ouverte. Rappelons pourtant que les tubes cruciformes chinois sont souvent décorés d'un masque de t'ao-t'ie, selon M. Bernhard Karlgren<sup>1)</sup> symbole de la fécondité ou d'une cicada, symbole de la résurrection.

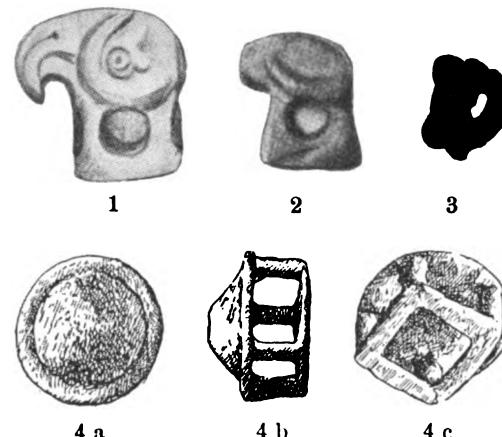


Fig. 9. 1. Bouton pourvu de quatre trous latéraux et orné d'une tête d'oiseau cornue. Kelermes, Russie méridionale. D'après N. Fettich, *Beitr. zum Entsteh. des altgerm. II. Stiles*, fig. 33: c. 2. Bouton comme le précédent, mais orné d'une tête de bouquetin, Hongrie. D'après N. Fettich, *Op. cit.*, fig. 34. 3. Bouton cruciforme. Région de Minoussinsk, Sibérie centrale. D'après Tallgren, *Trouvailles tombales in Finska Fornminnesförs Tidskr.*, t. XXIX, fig. 12: 11. 4. Bouton sur quatre "piliers". Kourgan de Tes, Région de Minoussinsk. D'après Tallgren, *Op. cit.*, fig. 5: 10. Tous les objets sont en grandeur réelle.

<sup>1)</sup> B. Karlgren, *Some Fecundity Symbols* in *Bulletin of the Museum of Far Eastern Antiquities*, vol. II, p. 41.

## RÉPARTITION GÉOGRAPHIQUE DES TUBES CRUCIFORMES.

Nous avons tenu à dresser ici une liste de tubes cruciformes trouvés en Eurasie. Elle ne prétend en aucune façon à être complète. Nous espérons néanmoins qu'elle pourra être de quelque utilité pour ceux qui désirent étudier ces monuments plus en détail.

En ce qui concerne les pièces trouvées en Extrême-Orient nous avons pris pour base les matériaux réunis à Stockholm, au Musée des Antiquités d'Extrême-Orient.

Quant aux renseignements que nous donnons ci-dessous au sujet de la répartition en Europe des tubes cruciformes, nous les avons réunis au cours de plusieurs voyages en Europe que nous avons entrepris en 1930 et en 1931 pour y étudier la civilisation du premier âge du fer.

### EXTRÊME-ORIENT.

Le Musée des Antiquités d'Extrême-Orient possède une quarantaine de tubes cruciformes dont les six suivants sont ornés d'une cicada:

n:o 10600: 53 (reproduit dans notre article "*Antiquités chinoises d'un caractère hallstattien*", Pl. IV: 1 in *Bull. Mus. Far East. Ant.*, n:o 2);  
n:o 11034: 119 (du même type que celui que nous avons reproduit ici, Pl. II: 2, mais les yeux de la cicada sont nettement indiqués);  
n:o 11034: 122 (du même type que le précédent, mais le décor en est peu visible; un des bras est perforé de deux trous irréguliers);  
n:o 11034: 48 (Pl. I: 4 a, b);  
n:o 11092: 18 (Pl. II: 3);  
n:o 11092: 23 (Pl. II: 2);

Une vingtaine de tubes cruciformes sont ornés d'un masque d'animal ou de t'ao-t'ie à savoir:

n:o 10599: 355 (Pl. II: 4 a, b);  
n:o 10599: 356 (Pl. II: 6 a, b);  
n:o 10599: 357 (*Antiquités chinoises d'un caractère hallstattien*, Pl. IV: 4 a, b, in *Bull. Mus. Far East. Ant.* n:o 2);  
n:o 10599: 358 (comme le précédent mais plus petit);  
n:o 10602: 106 (type croix grecque; le décor est presque le même que celui de la croix Pl. II: 4 a);  
n:o 10602: 107 (même type que le précédent);  
n:o 11033: 12 (Pl. II: 7);  
n:o 11033: 13 (même type que le précédent);

n:o 11034: 49 (le plus grand que nous connaissons; longueur des bras 63 millimètres; Pl. I: 6 a, b);  
n:o 11034: 120, 121, 123 (même type que celui que reproduit notre Pl. II: 4 a, b);  
n:o 11055: 37 (fragment d'un tube cruciforme à trois bras; même type que celui qui est reproduit Pl. II: 7);  
n:o 11071: 104 (Pl. I: 3 a, b);  
n:o 11092: 17 (le plus petit que nous connaissons; longueur des bras 23 millimètres; même type que celui que reproduit Pl. II: 1);  
n:o 11092: 20 (Pl. II: 1);  
n:o 11092: 21 (même type que celui que reproduit Pl. I: 3 a, b);  
n:o 11092: 22 (même type que celui que reproduit Pl. I: 3 a, b);  
n:o 11276: 80, 81 (deux ex. d'un même type; l'un est reproduit fig. 1);  
n:o 11276: 121, 122 (fig. 8).



Fig. 10. Tube cruciforme en bronze vu de trois faces. Provenance: Hupei du Nord, Chine.  
Grandeur  $\frac{1}{2}$ .

Trois pièces, toutes du même type que celui que nous reproduisons Pl. I: 5, sont ornées d'un motif en forme de spirale (n:os 11055: 30, 32, 33);

Deux tubes cruciformes sont ornés chacun de deux têtes de capridé (Pl. III: 1)  
n:o 11071: 35, 36;

Deux pièces d'un même type sont ornées d'une tête stylisée de bovidé. L'une d'elles est reproduite ici Pl. III: 2 a, b (n:o 11278: 24 a, b).

Une pièce (Pl. III: 3 a, b), est ornée d'un bouquetin (?) dont le corps est roulé autour de la tête (n:o 11278: 19).

Deux autres tubes cruciformes sont ornés de cercles concentriques (Pl. I: 1 a, b, et 2 a, b) l'un deux appartient à la collection H. A. Ramsden, l'autre est actuellement conservé au Musée des Antiquités d'Extrême-Orient n:o 11211: 203.

La plupart des pièces sont en forme de croix grecque. Seulement trois exemplaires sont à trois bras (n:os 11033: 12, 13; 11055: 37); 7 exemplaires affectent la forme d'une croix dite de Saint-André (n:os 10599: 355, 356; 11034: 120, 121, 123; 11055: 34, 35). Deux d'entre elles ont les bras courbés dont l'un est plus long que les autres (n:os 11055: 34, 35).

Une vingtaine de ces monuments ont perdu leur "état civil", c.-à-d. nous ne connaissons pas leur provenance, mais il est possible que quelques-uns d'entre eux proviennent de Hsin-Yang-chou, sur le chemin de fer Peking—Hankou, dans le Honan méridional, près de la frontière du Hupei.

Un exemplaire (n:o 10600: 53) que nous avons reproduit dans notre article *Quelques antiquités chinoises d'un caractère Hallstattien*, Pl. IV: 1 (*Bull. Mus. Far East. Ant.* n:o 2) provient de Shou-chou (Anhui), pendant quelques années capitale de l'ancien royaume de Ch'u, située dans la vallée du Huai-ho.<sup>1)</sup>

Une autre localité dans la proximité de Shou-chou, Feng Tai Hsien dans le Honan, en a livré six exemplaires n:o 11034: 118; n:o 11034: 119, 120 (comme celui de la Pl. II: 4); n:o 11034: 121 (comme celui qui est reproduit Pl. II: 4 mais plus petit); n:o 11034: 122 (comme celui qui est reproduit Pl. II: 2, mais le décor est en partie peu visible; n:o 11034: 123 (comme celui qui est reproduit Pl. II: 4).

3 exemplaires proviennent de Lo-yang (Honan) à savoir n:o 11092: 20 (Pl. II: 1); n:o 11092: 21 (comme celui qui est reproduit Pl. I: 4); n:o 11092: 23 (Pl. II: 2). Le tube cruciforme, fig. 1, (n:o 11276: 80) provient sûrement aussi de Honan, mais nous ignorons dans quelle localité il a été trouvé.

Plusieurs exemplaires proviennent du Hupei de Nord (cf. p. 208).

4 exemplaires n:o 10599: 355 (Pl. II: 4); n:o 10599: 356 (Pl. II: 6); n:o 10599: 357 (*Ant. chinoises d'un caractère Hallstattien* in *Bull. Mus. Far. East. Ant.* n:o 2, Pl. IV: 4 a, b); n:o 10599: 358; ont été trouvés ou bien dans la vallée du Huai-ho, dans l'Anhui du Nord ou dans le Kiangsu.

Deux exemplaires n:os 10602: 106, 107, tous les deux du même type que celui que nous avons reproduit Pl. II: 1, proviennent peut-être de Tsun Hua Hsien (Chihli).

Cinq exemplaires n:o 11071: 35 (comme celui reproduit Pl. III: 1); n:o 11071: 36 (Pl. III: 1); n:o 11278: 19 (Pl. III: 3 a, b); n:o 11278: 24 a, b (2 ex. d'un même type et dont l'un est reproduit ici Pl. III: 2 a, b) ont été acquis à Yülinfu dans le Shensi du Nord, aux confins du désert d'Ordos.

Un seul exemplaire a été trouvé dans le désert d'Ordos, n:o 11211: 203 (Pl. I: 2 a, b. Il est pourtant probable que quelques-unes des pièces qui ont été acquises à Yülinfu, ont été déterrées dans le désert d'Ordos ou ailleurs en Mongolie.

<sup>1)</sup> Cf. *Bull. Mus. Far East. Ant.* n:o 2, p. 69, note 2.

RÉGION DE MINOUESSINSK (GOUVERNEMENT DE JÉNISSÉISK)  
SIBÉRIE OCCIDENTALE.

Les tubes cruciformes trouvés dans la région de Minoussinsk proviennent de fouilles qui ont été faites accidentalement par des paysans.

Je suis redevable à M:lle V. Levaschova, conservateur au Musée de Minoussinsk,



Fig. 11. Bouton en bronze, vu de trois faces et pourvu de trois tubes rudimentaires. Provenance: Hupei du Nord, Chine. Grandeur 1/1.

d'avoir bien voulu me communiquer des croquis de plusieurs croix que nous reproduisons ici ainsi que d'avoir fourni quelques renseignements au sujet de ces croix.

1. Tube cruciforme, Pl. IV: 9, dépourvu de décor. L'une des faces est percée d'un petit trou rond. Provenance: village de Tachtip, dép. de Chakassky, (Abakane), près de la frontière du gouvernement de Tomsk. Tachtip se trouve près des sources de la rivière d'Abakane (affluent du Jénisséi) et entre les monts Kaltanovsky et les monts Altou. La steppe d'Abakane s'étend dans le voisinage de Tachtip. Musée de Minoussinsk n:o 8812.

2. Tube cruciforme comme le précédent mais percé des deux côtés d'un petit trou rond.<sup>1)</sup> Provenance: village de Lougavsk, dép. de Minoussinsk. Cette localité se trouve sur le bord du Jénisséi à proximité du Mont Izych et de la steppe d'Abakane. Musée de Minoussinsk, n:o 8814.

3. Tube cruciforme, Pl. IV: 5a, b, sans décor et pourvu, des deux côtés, d'un petit trou ovale. Provenance: village de Verchnjaja, dép. de Minoussinsk. Musée de Minoussinsk n:o 8813.

CAUCASE.

1. Tube cruciforme, uni, pourvu d'un côté d'un trou rectangulaire, Pl. IV: 11a, b. Provenance: vallée du Tchégem ou celle de Baksan. Le Comte Eugène de Zichy l'a décrit de la façon suivante:<sup>2)</sup> "Perle en bronze, en forme de croix dont les bras forment des tubes cylindres ouverts aux deux bouts; l'une des faces est munie d'une

<sup>1)</sup> Cf. Fr. Martin, *L'âge du bronze au Musée de Minoussinsk*, Pl. 31: 8.

<sup>2)</sup> *Voyage au Caucase et en Asie centrale*, t. II; Budapest 1897, p. 437 (n:o 314).

ouverture de forme carrée, placée au sommet; longueur 2,1, largeur 2 cm." Collection E. de Zichy.

2. Tube cruciforme, Pl. IV: 10, du même type que le précédent. Provenance: vallée du Tchégem. Musée de Krasnadar(?). Cf. *Matériali po Archeology Kaukaza* (Moscou 1888), t. I, Pl. XXIV: 33.

#### BULGARIE.

Deux tubes cruciformes. L'une des faces est pourvue d'une bosse. L'autre côté est percé d'un trou. Musée National de Sophia, n:o 794—798. Provenance: région de Gevgeli (Гевгелии). Cf. Ebert, *Reallexikon*, art. *Bulgarien*, t. II, Pl. 106: b.

#### ROUMANIE.

On y a trouvé quelques tubes cruciformes dont l'extrémité des bras est pourvue de quelques renflements en forme d'anneaux. Il existe, à l'endroit où les bras se croisent, sur l'une des faces, un petit renflement discoïde. Provenance: Transylvanie. Cf. Herepei, *Archeol. Értesítő* (Budapest), t. XVII (1897), p. 64 et Vasile Pârvan, *Dacia*, (Cambridge 1928), Pl. IX.

#### HONGRIE.

Plusieurs tubes cruciformes, fig. 2, 7, proviennent de Kisköszeg, com. Baranya. Fouilles non systématiques. Quelques-uns des objets qui ont été déterrés dans cette localité ont été trouvés dans un champ à urnes. Trois musées (au moins) possèdent des antiquités provenant de Kisköszeg, savoir: Naturhistorisches Hofmuseum (Wien); Musée National (Budapest) et Römischi-Germanisches Central-Museum (Mayence). Cf. *Archeol. Értesítő*, (Budapest, 1905), p. 190. *Mainzer Zeitschr.* 2:ème année, (Mayence, 1907), p. 42, fig. 5. Ebert, *Reallexikon*, t. VI, art. *Kisköszeg*.

#### TCHÉCO-SLOVAQUIE.

Sept tubes cruciformes (fig. 4) du même type que ceux, trouvés dans la région de Gevgeli (Bulgarie), dont nous venons de parler, proviennent de la grotte de Býčískála (Rocher du Taureau), près Adamsthal (Moravie), district de Brno (Brünn). Quelques pointes de flèche du type gréco-scythe et d'autres objets proviennent de cette localité. Naturhistorisches Hofmuseum (Wien). En ce qui concerne la grotte de Býčískála voir H. Wankel, *Bilder aus der mährischen Schweiz*, (Wien, 1882).

#### AUTRICHE.

Il existe au Naturhistorisches Hofmuseum à Wien quelques tubes cruciformes du type Pl. IV: 1, provenant de la nécropole, bien connue, de Hallstatt. Ces

pièces ont la face postérieure perforée d'un trou quadrangulaire. Un de ces objets, celui que nous reproduisons ici Pl. IV: 1, provient d'une sépulture à incinération (n:o 83). Le mobilier funéraire de cette tombe comprend une hache plate en fer, un anneau fait d'une tige en bronze et à coupe circulaire, 9 épingle en bronze à tête sphérique, deux boutons(?) disoides et une tige en fer.

Une autre croix, analogue au précédent, a été trouvée dans une sépulture à incinération (n:o 672) dont le mobilier funéraire comporte deux bracelets du type A. Mahr, *Die prähistorischen Sammlungen des Museums zu Hallstatt* (Wien 1914), Pl. VIII: 72; un objet de parure (= v. Sacken, *Das Grabfeld von Hallstatt*, Pl. XII: 12) et quelques petites perles en ambre jaune.

La croix en terre cuite (= v. Sacken, *Das Grabfeld von Hallstatt*, Pl. XVIII: 6a) à laquelle nous avons déjà fait allusion (p. 195) provient d'une sépulture à inhumation (n:o 603) dont le mobilier funéraire comporte une fibule à spirales (all. Brillenfibel), une fibule à navicella, une agrafe de ceinture, un anneau en bronze et quelques perles en ambre jaune.

#### BAVIÈRE.

Il y a parmi les objets appartenant à la collection de l'Académie des Sciences (Akademie der Wissenschaften) à Munich, quelques tubes cruciformes du type de la croix grecque. Huit d'entre eux proviennent d'une sépulture (n:o 3) de Schöngeisen. Cf. Franz Weber, *Bericht über neue vorgesch. Funde in Bayern*, in *Beiträge zur Anthropol. und Urgesch. Bayerns*, t. XI (Munich 1895), p. 92.

Huit autres tubes analogues proviennent d'une sépulture découverte à Pullach (Munich). Cf. p. 194, Pl. IV: 7 a, b et fig. 3.

#### YUGO-SLAVIE.

De nombreux tubes et boutons cruciformes ont été trouvés en Yougo-Slavie. On en voit notamment dans les Musées de Sarajévo, de Ljoubljana (Laibach) et de Zagreb (Agram).

Plusieurs d'entre eux ont été publiés dans les ouvrages suivants:

Franz Fiala, *Die Ergebnisse der Untersuchung prähist. Grabhügel auf dem Glasinac in Wissenschaftl. Mittheil. aus Bosnien und der Hercegovina*, t. I (1893), t. III (1894), t. IV (1896), t. V (1897) et t. VI (1899).

Franz Fiala, *Die Ergebnisse der Untersuchung prähist. Grabhügel in Südost-Bosnien (anschliessend Glasinac) im Jahre 1897*, in *Wissenschaftl. Mittheil. aus Bosnien und der Hercegovina*, t. VI (1899).

Čiro Truhelka, *Der vorgeschichtl. Pfahlbau im Savebette bei Donja Dolina in Wissenschaftl. Mittheil. etc.*, t. IX (1904).

W. Radimský, *Die Nekropole von Jezerine in Pritoka bei Bihać in Wissenschaftl. Mittheil. etc.*, t. III (1895).

Il existe au Museum für Völkerkunde à Berlin quatre tubes cruciformes (type de la croix grecque) cannelés et pourvus d'un côté d'un léger renflement circulaire (IVg 83c) provenant de St. Veit (Carniole). Ils ont été trouvés dans une sépulture sous tumulus dont le mobilier funéraire comporte entre autres choses: de la céramique, des pièces de harnachement, des pointes de flèche, un celt etc. Ces objets datent du VI:e siècle avant J.C. Ils ne sont pas publiés.

#### ADDENDUM.

Après avoir terminé cet article, nous avons découvert l'existence de plusieurs masses bi-cruciformes en terre cuite du même type que ceux dont nous parlons p. 193. Un de ces objets provient de la station de Sarmsheim an der Nahe (Rhénanie) Allemagne. (*Ausgrabungsberichte des Provinzialmuseums in Bonn. Vorgeschichtliche Ansiedelung bei Sarmsheim an der Nahe* von Hans Lehner in *Bonner Jahrbücher*, t. 124 (1917), p. 132, fig. 11 et Pl. XVII b, 6. Une autre pièce analogue a été trouvée à Osthofen près Worms (*Röm. German. Korrb. I* 1908, n:o 3, p. 25, fig. 7: 2. Cf. *ibid* n:o 4, p. 49).

La masse bi-cruciforme conservée au Musée de Mayence (cf. p. 193) provient de Klein-Winterheim. Elle a été publiée dans la *Westdeutsche Zeitschrift*, t. IX, Pl. 14: 9.

A en juger par une figure reproduite Pl. VII: 6 in Sime Ljubic, *Popis Arkeologičkoga Odjela Nar. Zem. Muzeja u Zagrebu. Odsjek I* (Zagreb 1889), une pièce analogue doit se trouver au Musée de Zagreb (Agram) en Carniole.

Peut-être ces monuments doivent-ils être rapprochés des objets semblables en bronze (mais massifs), qui ont été trouvés à Giubiasco (canton du Tessin) Suisse, conservés au Musée de Zürich. Cf. *Soc. préhist. Suisse*, 3<sup>e</sup> année (1911), fig. 40, et Déchelette, *Manuel d'archéologie (Epoque de la Tène)*, fig. 564. On en a trouvé aussi ailleurs p. ex. en Bohême (cf. J. L. Píč, *Čechy na úsvitě dějin (Starožitnosti země české. Díl III)*, Prague, 1902, Pl. XXVIII: 1.

Une croix analogue à celles reproduites ici Pl. V: 1—3 a été déterrée à Basel-Augst près Bâle (Suisse). Cette pièce appartient au Musée de Zürich.

Il existe dans l'ancienne collection Peter Bahr (Shanghai) plusieurs tubes cruciformes et des accessoires de harnachement trouvés ensemble dans une sépulture découverte dans le Hupei du Nord. Quelques-unes de ces pièces ont été acquises par le Musée des Antiquités d'Extrême-Orient.

Les tubes, très courts, sont à coupe circulaire. L'une des faces est bombée et pourvue dans son milieu d'un trou rond, encerclé d'un fin bourrelet. De l'autre côté on voit une grande ouverture (fig. 10).

Le mobilier funéraire comporte encore les objets suivants.

3 boutons qui sont pourvus chacun de *trois* "tubes" rudimentaires ou trous

circulaires (fig. 11). L'une des faces est ornée d'un renflement presque hémisphérique autour duquel nous voyons un bourrelet disposé en cercle. Ce décor se rapproche de celui qui orne la pièce reproduite ici Pl. I: 1 a.

29 boutons bombés dont quatre pourvus, dans leur milieu, d'un petit trou.

4 pièces de harnachement du type Sirén, *A History of Early Chinese Art*, t. I, Pl. 68: B (dans le bas au milieu de la planche). Les pièces de ce type, qui reproduisent peut-être des cornes stylisées(?), ont vraisemblablement exercé une certaine influence sur le décor des boutons cruciformes du même modèle que ceux, trouvés dans la sépulture et ceux du type Pl. I: 1 a.

4 autres accessoires de harnachement et d'un même type. Ils seront vraisemblablement publiés ultérieurement.

1 rondelle du type Sirén, *Op. cit.*, Pl. 68: B (dans le haut, au milieu de la planche), mais le décor comporte seulement une strie circulaire et quatre stries spiriformes.

1 objet quadrangulaire. A une des extrémités on voit un trou rectangulaire, le long duquel court un bourrelet arrondi, strié.

Tous ces objets sont conçus dans le style Chou. Il est évidemment d'un certain intérêt de constater que les tubes cruciformes ici font partie d'un mobilier funéraire, dont tous les objets peuvent être expliqués comme étant des pièces de harnachement.

Dans un livre qui vient de paraître, *Us et coutumes de la Région de Peking d'après le Je Sia Kieou Wen K'ao* (Peking 1930; Albert Nachbaur éditeur), M. Maurice Adam reproduit (p. 16 bis) deux tubes cruciformes des types Pl. II: 1, 2 ici et quelques accessoires de harnachement, le tout provenant du Honan. Il ne ressort pas du texte si les objets en question ont été trouvés ensemble.



Fig. 12. Tête d'animal en bronze dont la face postérieure est pourvue de deux tubes parallèles.  
Provenance présumée: Honan. Grandeur 1/1. Collection privée.

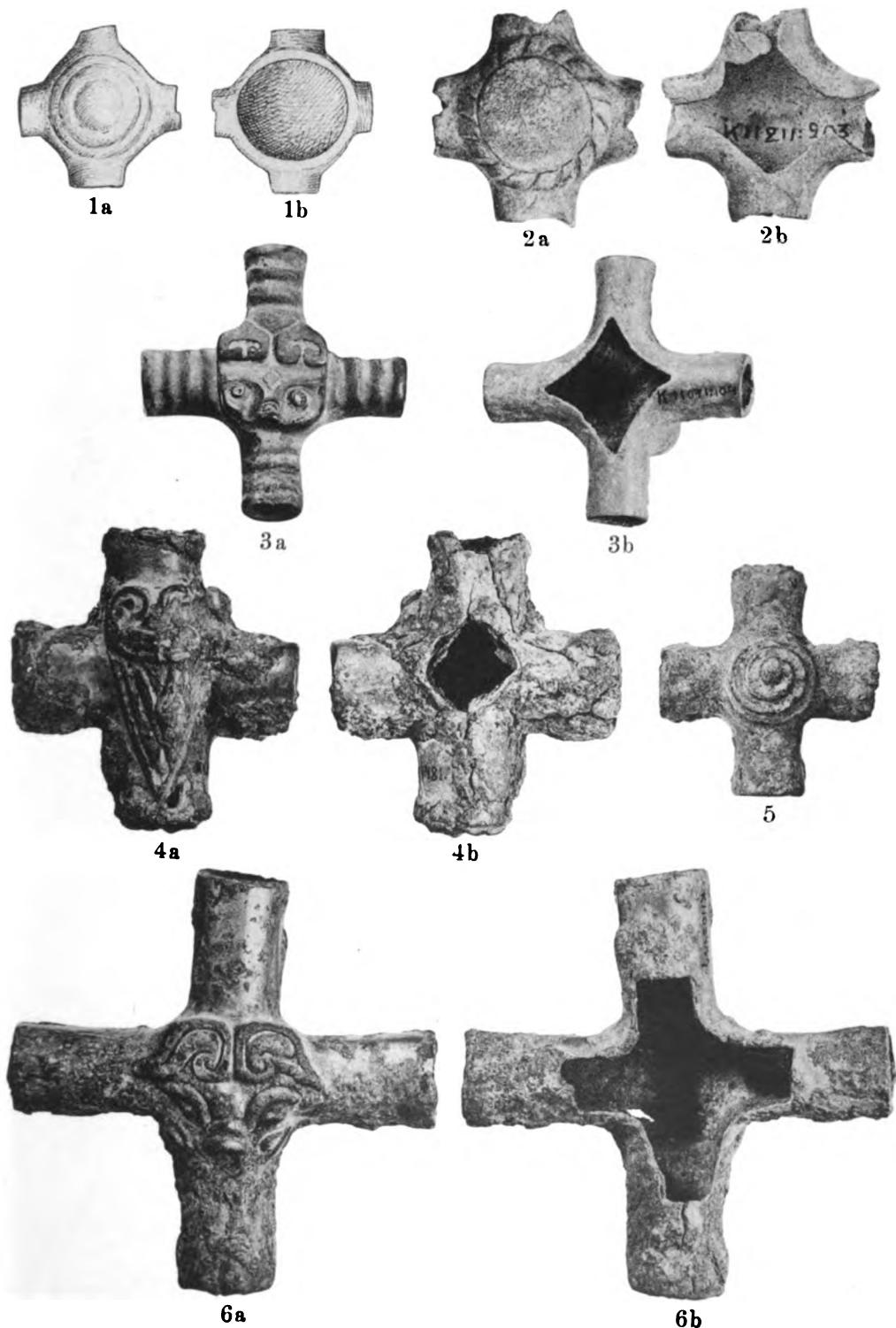


## **PLANCHE I**

## PLANCHE I.

Tubes cruciformes. N:o 1 appartient à la collection Ramsden, les autres au Musée des Antiquités d'Extrême-Orient. Grandeur naturelle.

- 1 a, b. Vu de deux faces. Provenance supposée: Mongolie. D'après H. A. Ramsden, *Chinese Early Barter and Uninscribed Money, (Manuals of Far Eastern Numismatics, n:o 2)*; Yokohama 1912; fig. 63.
- 2 a, b. Vu de deux faces. Provenance: désert d'Ordos. N:o 11211: 203.
- 3 a, b. Vu de deux faces. Chine. Provenance inconnue. N:o 11071: 104.
- 4 a, b. Vu de deux faces. Chine. Provenance inconnue. N:o 11034: 48.
5. Chine. Provenance inconnue. N:o 11055: 30.
- 6 a, b. Vu de deux faces. Chine. Provenance inconnue. N:o 11034: 49.



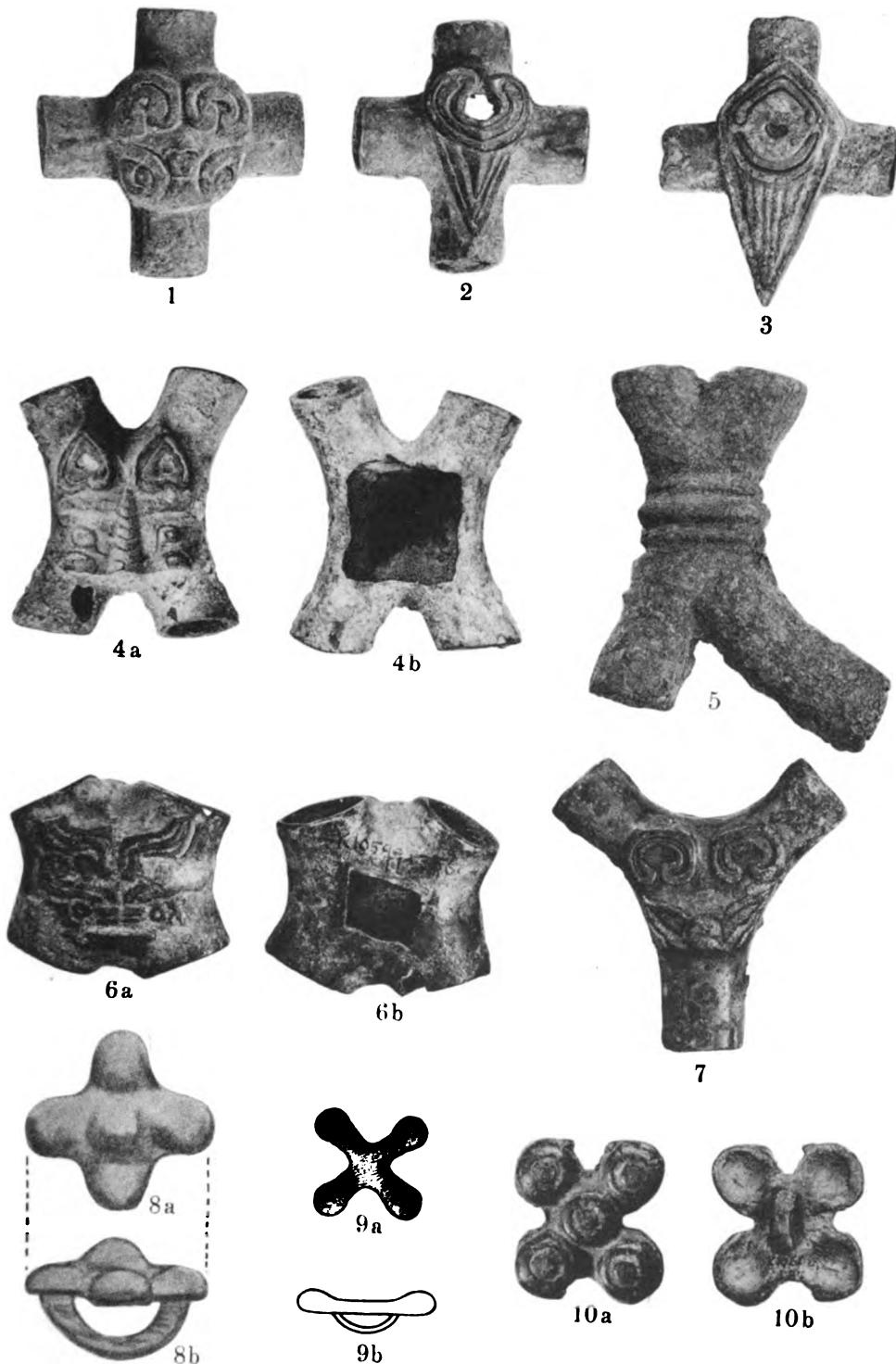


## **PLANCHE II**

## PLANCHE II.

Tubes et boutons cruciformes. Les n:os 1—7 et 10 appartiennent au Musée des Antiquités d'Extrême-Orient;

1. Provenance: Lo-yang (Honan). N:o 11092: 20. Grandeur  $\frac{1}{1}$ .
2. Provenance: Lo-yang (Honan). N:o 11092: 23. Grandeur  $\frac{1}{1}$ .
3. Chine. Provenance inconnue. N:o 11092: 18. Grandeur  $\frac{1}{1}$ .
- 4 a, b. Vu de deux faces. Provenance: vallée du Huai-ho, Anhui du Nord ou Kiangsu. N:o 10599: 355. Grandeur  $\frac{1}{1}$ .
5. Chine. Provenance inconnue. N:o 11055: 34. Grandeur  $\frac{1}{1}$ .
- 6 a, b. Vu de deux faces. Provenance: vallée du Huai-ho, Anhui du Nord ou Kiangsu. N:o 10599: 356. Grandeur  $\frac{1}{1}$ .
7. Chine. Provenance inconnue. N:o 11033: 12. Grandeur  $\frac{1}{1}$ .
- 8 a, b. Vue de deux faces. Provenance: Russie du Sud. D'après N. Fettich, *Beiträge zum Entstehungsproblem des altgermanischen II. Stiles* (Budapest 1929), fig. 31. Grandeur  $\frac{1}{1}$ .
- 9 a, b. Vu de deux faces. Provenance: Jezerine, Bosnie. D'après Radimský *Op. cit.*, p. 74, fig. 246. Grandeur  $\frac{2}{3}$ .
- 10 a, b. Vu de deux faces. Provenance présumée: Tsun-hua-hsien (Chihli), Chine du Nord. N:o 10602: 87. Grandeur  $\frac{1}{1}$ .

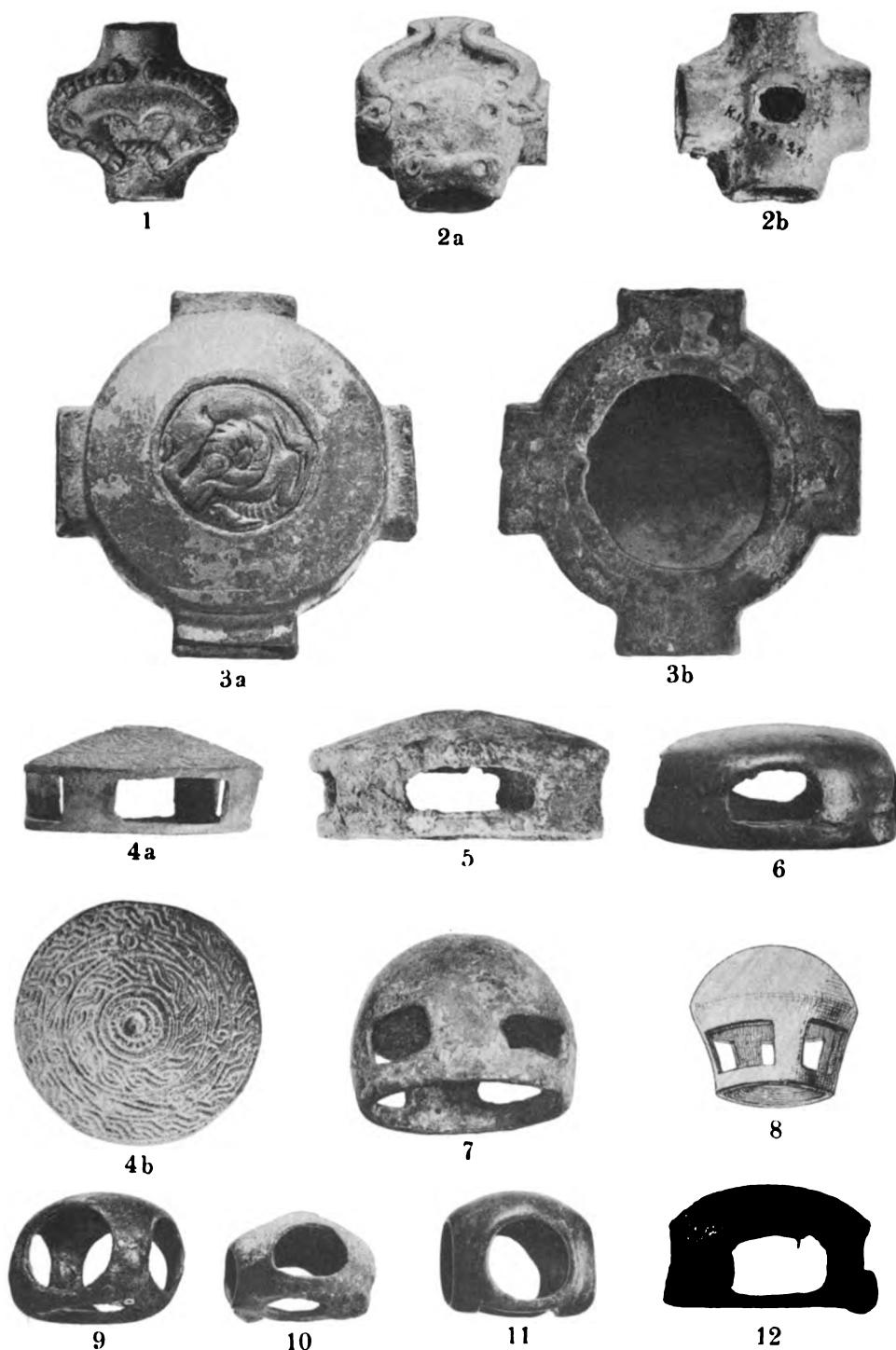




### **PLANCHE III**

### PLANCHE III.

1. Tube cruciforme, acquis à Yülinfu (Shensi du Nord). Musée des Antiquités d'Extrême-Orient n:o 11071: 36. Grandeur  $\frac{1}{1}$ .
- 2 a, b. Tube cruciforme vu de deux faces, acquis à Yülinfu (Shensi du Nord). Musée des Antiquités d'Extrême-Orient n:o 11278: 24: b. Grandeur  $\frac{1}{1}$ .
- 3 a, b. Tube cruciforme vu de deux faces, acquis à Yülinfu (Shensi du Nord). Musée des Antiquités d'Extrême-Orient n:o 11278: 19. Grandeur  $\frac{1}{1}$ .
- 4 a, b. Bouton conique, pourvu de quatre ouvertures latérales, vu d'en haut et de face. Provenance présumée: vallée du Huai-ho. Musée des Antiquités d'Extrême-Orient n:o 11000: 425. Grandeur  $\frac{1}{1}$ .
5. Bouton du même type que le précédent, mais sans décor. Provenance: Anhui du Nord, Kiangsu ou la vallée du Huai-ho. Musée des Antiquités d'Extrême-Orient n:o 10599: 287. Grandeur  $\frac{1}{1}$ .
6. Bouton bombé pourvu de quatre trous latéraux. Provenance: désert d'Ordos. Musée des Antiquités d'Extrême-Orient n:o 11003: 1163. Grandeur  $\frac{1}{1}$ .
7. Bouton du même type que le précédent mais plus haut. Provenance: désert d'Ordos. Musée des Antiquités d'Extrême-Orient n:o 11003: 1155. Grandeur  $\frac{1}{1}$ .
8. Bouton du même type que le précédent. Hallstatt (Autriche). D'après von Sacken, *Das Grabfeld von Hallstatt*, Pl. XVIII: 14. Grandeur env.  $\frac{1}{1}$ .
- 9—11. Boutons bombés, chacun pourvu de quatre trous latéraux. Provenance: désert d'Ordos. Musée des Antiquités d'Extrême-Orient n:os 11003: 1150, 1158 et 1164. Grandeur  $\frac{1}{1}$ .
12. Bouton pourvu de quatre trous latéraux. Provenance: Bevodnaja, gouvernement de Viatka, Russie. D'après *Otcet* 1898, p. 45.



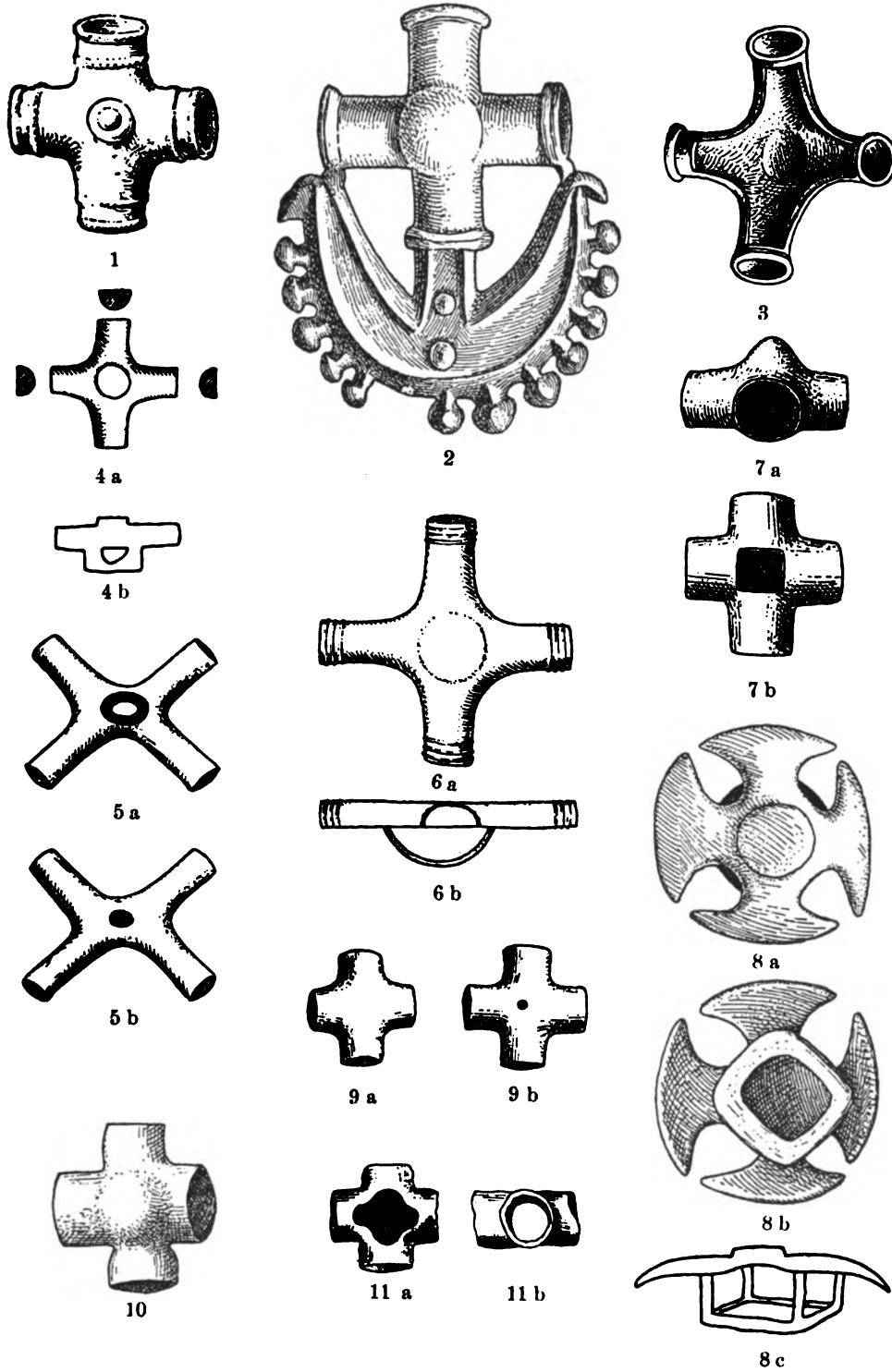


## **PLANCHE IV**

#### PLANCHE IV.

##### Tubes et boutons cruciformes.

1. Provenance: Cimetière de Hallstatt, Autriche. Sépulture n:o 83. D'après v. Sacken, *Das Grabfeld von Hallstatt*, Pl. XVIII: 15. Naturhist. Hofmuseum, Wien. Grandeur  $\frac{1}{1}$ .
2. Provenance: Osovo, Bosnie sud-orientale. D'après F. Fiala, *Die Ergebnisse der Untersuchung prähist. Grabhügel in Südost-Bosnien in Wissenschaftl. Mittheil. aus Bosnien und der Hercegovina*, t. VI, fig. 26. Grandeur  $\frac{1}{1}$ .
3. Provenance: Donja Dolina, Bosnie. D'après Čiro Truhelka, *Der vorgeschichtl. Pfahlbau im Savebette bei Donja Dolina in Wissenschaftl. Mittheil. aus Bosnien und der Hercegovina etc.*, t. IX, Pl. XLIX: 12. Grandeur  $\frac{1}{1}$ .
- 4 a, b. Bouton cruciforme massif, vu de deux faces. Provenance: Watsch, Carniole, Yougo-Slavie. D'après un dessin fait par l'auteur. Musée de Ljoubljana (Laibach), Yougo-Slavie. Grandeur  $\frac{1}{1}$ .
- 5 a, b. Vu de deux faces. Provenance: village de Verchnjaja, région de Minoussinsk. Musée de Minoussinsk, n:o 8813. D'après un dessin communiqué par M:lle V. Levaschova. Grandeur env.  $\frac{1}{1}$ .
- 6 a, b. Bouton cruciforme inassif, vu de deux faces. Provenance: Velem St. Vid (Veit), Hongrie. Musée de Szombathely (Hongrie), n:o Id 30. D'après un dessin fait par l'auteur. Grandeur  $\frac{1}{1}$ .
- 7 a, b. Vu de deux faces. Provenance: Pullach (Munich), Bavière. D'après J. Naue, *Die Hügelgräber mit dem Fürstengrabe bei Pullach in Beiträge zur Anthropologie und Urgesch. Bayerns*, t. V. (1884), Pl. XV. Grandeur  $\frac{1}{1}$ .
- 8 a-c. Vu de trois faces. Provenance: Dalj Busija (Carniole), Yougo-Slavie. Musée de Zagreb (Agram). D'après un dessin fait par l'auteur. Grandeur  $\frac{1}{1}$ .
- 9 a, b. Vu de deux faces. Provenance: village de Tachtip, dép. de Chakassky (Abakane), Sibérie centrale. Musée de Minoussinsk n:o 8812. D'après un dessin, communiqué par M:lle V. Levaschova (Minoussinsk). Grandeur  $\frac{1}{1}$ .
10. Provenance: vallée du Tchégem, Caucase. D'après *Matériali Kaukaza*, t. I, Pl. XXIV, fig. 33. Grandeur  $\frac{1}{1}$ .
- 11 a, b. Vu de deux faces. Provenance: vallée du Tchégem ou du Baksan, Caucase. D'après E. de Zichy, *Voyages au Caucase*, t. II, Pl. XIV: 16, 16 a. Grandeur  $\frac{2}{3}$ .

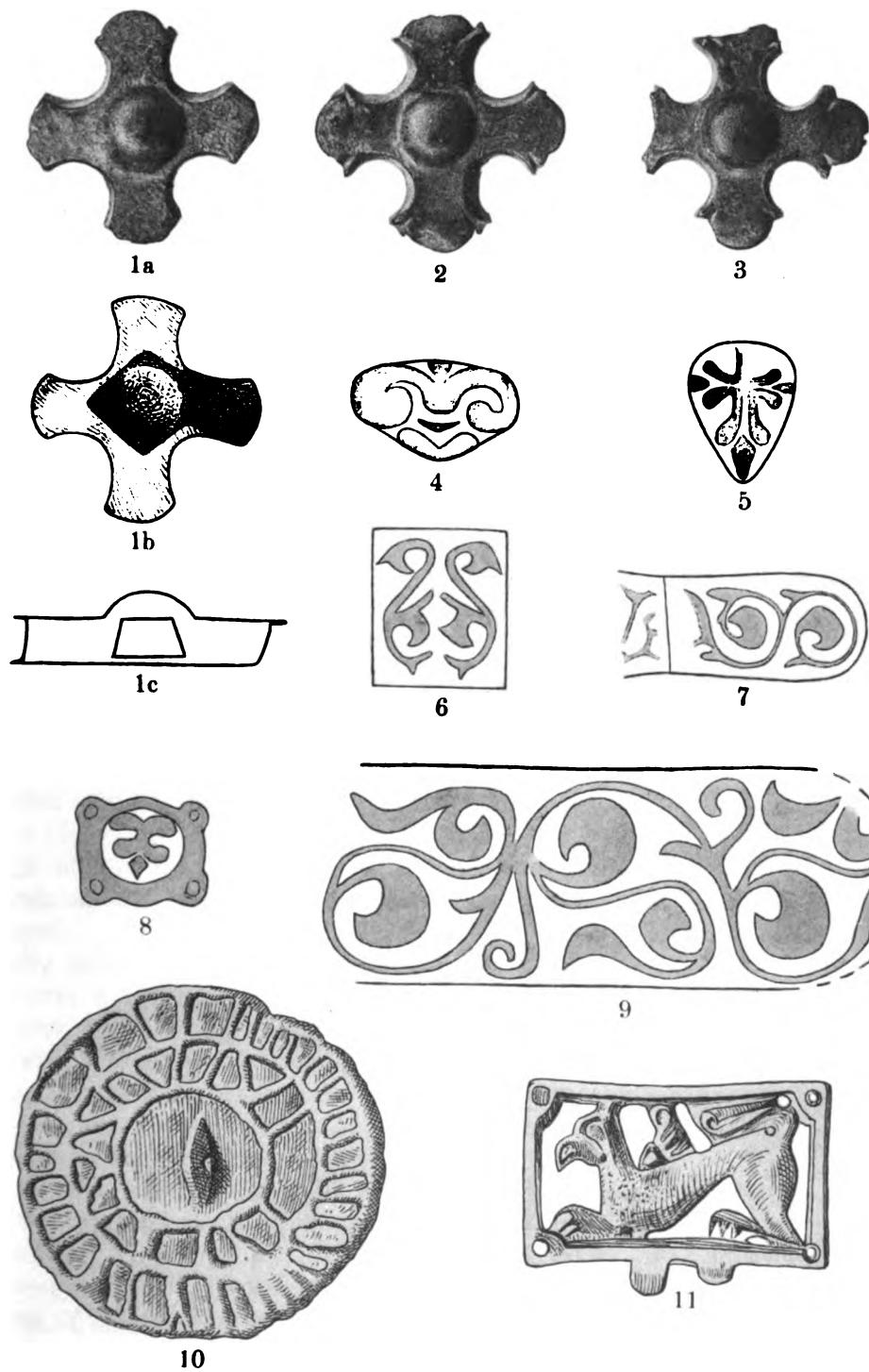




**PLANCHE V**

## PLANCHE V.

- 1 a-c. Tube cruciforme à coupe trapézoïdale, vu de trois faces. Provenance: oppidum de Novi Banovci près le Danube, Yougo-Slavie. Musée de Zagreb (Agram). D'après une photographie communiquée par M. V. Hoffiler, conservateur du Musée de Zagreb. Grandeur  $\frac{1}{1}$ .
- 2, 3. Tubes cruciformes du même type et provenance que le précédent. Musée de Zagreb. D'après des photographies communiquées par M. V. Hoffiler. Grandeur  $\frac{1}{1}$ .
- 4—8. Garnitures de ceinture. Provenance: Novi Banovci, Yougo-Slavie. Musée de Zagreb, n:os B798, 1098, 200, 901, MO2. D'après des dessins faits par l'auteur. Grandeur  $\frac{1}{1}$ .
9. Garniture de ceinture. Provenance: Oppidum de Borovo, près Dalj Busija, Yougo-Slavie. Musée de Zagreb. D'après un dessin fait par l'auteur. Grandeur  $\frac{1}{1}$ .
10. Miroir. Provenance: vallée du Baksan ou du Tchégem (Caucase). D'après E. de Zichy, *Voyages au Caucase et en Asie centrale*, t. II, Pl. XV: 1 et p. 441 (n:o 372). Grandeur  $\frac{2}{3}$ .
11. Garniture de ceinture. Lébény (Leiden), com. Mosony (Wieselburg), Hongrie. D'après J. Hampel, *Altherthümer des frühen Mittelalters in Ungarn*, t. III, Pl. 113: 1. Grandeur  $\frac{3}{4}$ .





# HUNTING MAGIC IN THE ANIMAL STYLE

BY

*J. G. ANDERSSON.*

## INTRODUCTION.

In an article entitled "Der Weg über die Steppen", published in the first volume of this Bulletin, pages 143—163, I have tried to show how throughout the history of mankind the vast area of desert and steppe extending through Eurasia from the Black Sea to the Pacific has formed a highway of migrations, which has transmitted a very considerable part of the diffusion of cultures across this, the largest of the continents.

When, in the second half of the first millennium before Christ, history began, through Greek and Chinese sources, to throw some scanty light on these inland areas, the Eurasian steppes were peopled by a multitude of warlike nomad tribes.

Best known to us are the Scythians, thanks to their location on the northern shore of the Euxine Sea, where they were in intimate contact with flourishing Greek colonies. Their historian Herodotus collected from sources available to him some information concerning the tribes living further north and east, such as the Sauromatae, the Thyssagetae, the Iyrcae, the Massagetae, the Argippaei, the Issedones and, furthest to the north-east, the Arimaspi.

On the other hand, the Chinese authors tell of the Hiung-nu (by some authors identified with the Arimaspi), the Huns who, after they had been finally defeated by the Chinese in the first century A. D., turned westwards and became the scourge of Europe. Other tribes mentioned by Chinese chroniclers are the Yüe-chih and the Wu-sun, who surprised the Chinese with their fair hair and blue eyes.

Owing to the scarcity of the historical data it is very difficult to identify the actual sites, not to mention the ethnological affinities of the peoples mentioned by the Greek and Chinese historians. When there still remains so much to be elucidated with reference to the racial relationship of peoples like the Scythians and the Hiung-nu, who were in close contact with the learned peoples of the time, little can be drawn from historical sources to throw light upon the tribes who lived in the distant hinterland.

Under these circumstances the archaeological evidence is of supreme importance, the more so as the finds are very rich, beautiful, and to a certain extent conclusive.

Richest in treasure and most important as a result of careful scientific research is the area of ancient Scythia, the land on the northern shore of the Black Sea, the Euxine of Herodotus. The explorations undertaken by Russian scientists have

been summarized by J. Tolstoi, N. Kondakov and S. Reinach in *Antiquités de la Russie Méridionale* (Paris 1891), Ellis H. Minns: *Scythians and Greeks* (Cambridge 1913), M. Rostovtseff: *Iranians and Greeks in South Russia* (Oxford 1923) and G. Borovka: *Scythian Art* (London 1928), the last-named work strongly emphasizing also the Siberian area.

Early finds from southern Siberia were brought to Russia already in the time of Peter the Great, and the Siberian treasures form, together with the rich collections from the northern shore of the Black Sea, one of the wonders of the Hermitage in Leningrad. The Museum of Minoussinsk is another famous store-house of this ancient art. Out of the rich literature on Siberian archaeology we quote only W. Radloff: *Siberian antiquities* (Russian, in four volumes), F. R. Martin: *L'âge du bronze au musée de Minoussinsk* (Stockholm 1893), Tallgren: *Collection Tovostine* (Helsingfors 1917) and J. V. Merhart: *Bronzezeit am Jenissei* (Wien 1926).

A third area of finds belonging to this group is that of Ananino, on the river Kama, W. of the Ural mountains. This province is situated in the wooded country N. of the steppe area. It is relatively insignificant as far as regards the number and splendour of the objects found, but it has been carefully surveyed and exhaustively described by Tallgren: *L'époque dite d'Ananino*. SMYA 31. 1919.

During the last ten years it has become increasingly evident that a fourth area of animal-style finds exists in Inner Mongolia and the Sino-Mongolian borderland. Isolated finds from this region have been reproduced and briefly mentioned by various authors, and efforts at surveying the South Mongolian Animal Style art have been made by Borovka: *Scythian Art*, 1928, Rostovtseff: *Le centre de l'Asie, la Russie, la Chine et le style animal*, 1929, and Rostovtseff: *The Animal Style in South Russia and China*, 1929.

It is highly probable that several more centres of the animal style will be recognized as our knowledge progresses.<sup>1)</sup> An indication in this direction is the enlargement of my map of the distribution of the Animal Style given by Tallgren in ESA VII, 1932, p. 8. Similarly, a brief but important note by V. J. Tolmatcheff: *Traces of Scythian and Siberian civilisation in Manchuria*, 1929, proves the existence in W. Heilungkiang of abundant and typical finds of the Animal Style.

The Sino-Mongolian province of the Animal Style has a peculiar interest in common with the Euxine, the Scythian area on the N. shore of the Black Sea. In both regions the steppe peoples came into intimate contact with two of the principal high civilizations of that time, the Greek on the Black Sea and the Chinese on the southern outskirts of the Mongolian steppe.

In both areas two widely different arts come into contact, so that not only do many objects exhibit a real blending of the two styles, but in addition the tombs

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<sup>1)</sup> See my article "Der Weg über die Steppen", p. 149, foot-note.

contain, piled together side by side, purely nomad Animal Style objects and things equally purely Greek or Chinese, as the case may be.

The Scythian area is well known from literary sources as well as from the archaeological monuments. The wealth of historical data is considerable, the location of the Greek colonies is well established and a number of carefully excavated tumuli give us abundant data as to the association of art treasures.

On the Sino-Mongolian border the evidence is still rather scarce and ambiguous. The Chinese historical records give very little beyond mere political notes: the names of Hiung-nu chiefs, their consorts and sons, crafty diplomatic moves on the part of the Chinese, insolence and violence on that of the nomads, inroads made by the nomad cavalry far into settled Chinese territory, mighty punitive expeditions sent into the desert by the Son of Heaven, defeat or victory.

Very little is told of the mode of life of the nomad peoples, scanty are the notes on the tribute they paid, and next to nothing is said about their ever-changing political topography.

With the exception of the Chen-fan finds in Kansu, which we will describe in a forthcoming monograph in *Palaeontologia Sinica*, no systematic excavations have so far been undertaken on the Hiung-nu sites of Inner Mongolia. When we peruse the writings of Rostovtseff, Borovka and others on the so-called "Scythian"<sup>1)</sup> finds from the Far East, we note a striking uncertainty with reference to the provenance of the finds. They are noted in a general way to have come from N. China, or at the very best they are bought in Peiping.

As will be shown in full detail in the next chapter, we have been able during the last few years to build up a considerable collection of these nomad objects. Our data on the provenance are, it is true, far from definite, nevertheless they go far beyond anything that has as yet been published to indicate the places where the Far Eastern "Scythian" objects have been found.

With the evidence we have gathered it has become possible to outline the existence of a well-defined Sino-Mongolian province of the Animal Style, extending from Jehol in the East to Chen-fan in the West and comprising not only the grasslands of Inner Mongolia but also northernmost Hopei and Shansi, where the water flows to the sea and where the Chinese have settled and tilled the soil for nearly two thousand years at least.

In my article "Der Weg über die Steppen"<sup>2)</sup> I suggested the name Suiyuan for

<sup>1)</sup> With our present knowledge it is quite out of date to speak of the S. Mongolian animal style bronzes as Scythian. Scythia is one of the provinces of the vast area embracing the Animal Style — the westernmost, just as Ordos is one of the easternmost. Davidson Black has proved that the Chen-fan people, who used animal style bronzes, were members of the Mongolian race. Ethnological denominations are in this case apt to cause confusion, whereas geographical names such as Euxine, Minoussinsk and Ordos delimit definite areas.

Scythian as a term for the S. Mongolian bronzes is in every way an out-of-date misnomer, blocking the progress of research and holding us back in obscurity.

<sup>2)</sup> This Bulletin, vol. I, p. 148.

this Sino-Mongolian province of the Animal Style. Most of the material at that time in my hands was obtained in Suiyuan (Kuei-hua-cheng). However, as early as in 1929 Professor Minns had suggested to me the name *Ordos* as the most fitting denomination of this province, and now that, thanks in the first place to the collecting activities of Mr. Orvar Karlbeck, we know that a large number of the nomad bronzes undoubtedly come from that very *Ordos* area which, according to the Chinese chronicles, was for long periods the battle-ground of the *Hiung-nu* and the Chinese, it seems to me very appropriate to give this province of the Animal Style the name *Ordos*.

With reference to the provenance of the *Ordos* bronzes, I should here like to touch upon a very difficult problem. Even if it be proved that they were unearthed on the Sino-Mongolian borderland, are these bronzes really indigenous of this area? Is it not quite possible that they are imported goods brought from distant Siberia or the still more distant Euxine, where a similar art is known to have flourished?

The best reply I can give to this question, which is still very obscure, is that quite likely some of the bronzes in our hands may be imports from S. Siberia. There are in fact some very few, the type and patina of which would indicate a possible Siberian origin. Occasionally Siberian objects may have been brought down to Peking during the last few years, when there was a brisk demand for "Scythian" things. Far more probable is it, however, that the imports were in most cases made during the lifetime of the *Hiung-nu*. The tomb treasure of Noin-Ula, amongst which we find imports both from China (lacquer) and from the distant West (textiles), proves that imported goods have been carried over very large distances. The mode of life of the steppe nomads was always more or less migratory. When moving their herds to new pastures, when carrying trading goods and when on campaigns of conquest they covered very large distances with remarkable ease. It should be remembered that the capital of the *Hiung-nu* Empire was for long periods on the northern outskirts of the desert bordering on Siberia, and there must have existed a constant flow of intercourse, trade and transport of supplies across the Gobi from north to south and vice versa.

In spite of all these considerations the following inventory of the *Ordos* bronzes will prove that these art objects are to a very large extent indigenous of the area in which they were found. There are characteristic *Ordos* features indicating a local origin.

When studying these bronzes we found that certain facts were of special significance: faithful naturalism springing from a direct and intimate study of the wild animal life is here much more in evidence than is the case in the sophisticated "court art" of the Euxine and, to some extent, of Siberia. Furthermore, pairing scenes and, in a more general way, scenes from the family life of the game animals, are here in evidence to an extent to which there is no parallel in the other areas.

Basing my conclusions upon these and cognate facts, and combining them with observations on the present animal life of the Eurasian steppe-desert areas, I have arrived at the conclusion that the Animal Style developed to a very large extent under the stimulus of an active hunting magic, along much the same lines as that which, according to Salomon Reinach and others, gave rise to the other grand Animal Style in the history of mankind — that of the late Palaeolithic time.

It is this hypothesis that I offer in this article to the friendly criticism of those colleagues who, like myself, devote their time and interest to the unravelling of the many fascinating problems of the Animal Style of the late Bronze Age in Central Asia.

The Ordos bronzes are still so little known, in spite of the many beautiful contributions made by eminent art students, that I have found it necessary to give an inventory of the group. In my review of the various families of animals represented in this art I have inserted some biological notes intended to give the natural background against which this great and fascinating art grew up.

The reader should note that the detailed descriptions of the plates are given in the various successive chapters. By this arrangement every object is fully described in the chapter to which it belongs and unnecessary repetition is avoided. For the reader's guidance there is, at the end, a brief table of the plates, with references to the full description in the text.

#### INVENTORY OF THE ORDOS BRONZES.

The collection of Ordos bronzes in the possession of the Museum of Far Eastern Antiquities comprises at present 2,103 pieces, apart from some smaller collections excavated in the Chen-fan desert or obtained through purchase from two mountain villages in the northernmost part of Hopei province, near the Sino-Mongolian border. These smaller collections will be described in special monographs and are consequently left out of consideration in this paper.

Our large collection of Ordos bronzes has been brought together from many different sources. Many specimens come from curio-shops in Peking, and no opinion as to the provenance of those specimens can be expressed beyond the high probability that they come from the Sino-Mongolian borderland, presumably to a considerable extent from the Ordos desert and the Suiyuan area.

A very large collection, mostly plain pieces, was obtained in 1927 from Mr. F. A. Larson, who declares that he acquired the lot in Kuei-hua-cheng (Suiyuan), with the further statement that most of the pieces originally came from the Ordos desert. After having seen the numerous splendid specimens in the possession of Mr. C. T. Loo, of Paris, and other collectors, I have arrived at the conclusion that this large consignment was probably a residue left behind

after the choice specimens had been picked out. Scientifically the big Larson collection was very valuable as it made us acquainted for the first time with many simple household objects.

Some smaller additional collections (Larson II—VII) have later been obtained from Mr. Larson, and the provenance of these consignments is certainly very much the same as stated above.

Through the medium of the Rev. Joel Eriksson, resident missionary of Hattin Sum, Chang-pei-hsien, Inner Mongolia, a considerable number of pieces were collected by or from the Mongols in the near vicinity of Hattin Sum and Hallong Osso, Eriksson's former mission-station situated about half-way between Hattin Sum and Kalgan. This material is evidently of special importance as the specimens were certainly obtained within a short distance of the spot where they were originally found.

Some very few pieces were bought in 1929 in Paris from the firms C. T. Loo and L. Wannieck. These specimens were stated to have been obtained in Peking or on the Sino-Mongolian borderland.

A single, but very important object (Plate V: 1) was bought from Dr. O. Burchard, of Berlin.

From the above statements as to the sources from which we obtained our Ordos bronzes it is evident that all, or at any rate the overwhelming majority of them, came from the Sino-Mongolian borderland, extending from Luan-ping-hsien (Jehol) in the east to Chen-fan-hsien (Kansu) in the west, with a centre of frequency probably in the Ordos desert.

Our collection of Ordos bronzes is essentially different from those seen in the hands of other collectors and antiquity-dealers, who have been guided principally by their love of beauty and exquisite specimens. For this reason very numerous common and simple objects, such as the crude and unadorned vessels, the simple undecorated knives, the nails and spoons etc., are entirely absent in other collections but fully represented in ours. Without boasting, therefore, we feel justified in saying that ours is the only one of all existing collections that can claim to give an approximately adequate representation of the inheritance of bronze objects bequeathed to us by the ancient Hiung-nu.

As an introduction to our treatise on the evidence of hunting magic in this bronze art, we give below an inventory of the Ordos bronzes in our collection. Some few sections, such as the socketed celts, the arrow-heads, the fibulae and the astragali, are excluded, as they will be dealt with in special papers.

The inventory given below of our Ordos bronzes comprises only a small selection of the most important types, to be followed later on by an exhaustive monograph on the entire material. The inventory is at the same time purely descriptive, classifying the objects in groups according to their different uses. Undoubtedly there are within each group objects of widely different age. The question of chronology will be postponed until a later occasion, as also the diffi-

cult questions of the inter-relationship with other provinces of the Animal Style, such as Minoussinsk and the Euxine.

### KNIVES.

The total number of knives in our collection is 259 specimens ranging from exceedingly simple, undecorated blades, such as I: 5 to such extravagant baroque types as V: 1.

A striking feature of our collection of knives is their similarity in most details to the large series of knives reproduced by Martin in his "L'âge du bronze au Musée de Minoussinsk". Our I: 1 is closely duplicated by Martin's 11: 1. Our I: 2, 7 are somewhat akin to 13: 12, 14 by Martin. Our II: 1 is very much like 17: 8, 9 of Martin's work. Our II: 2 resembles Martin's 13: 2 and other numbers of the same plate. Our II: 4 is like Martin 18: 13, 14. Our III: 3 shows considerable similarity to several specimens of Martin's Plate 11.

On the other hand there are striking dissimilarities between the two groups. Such knives with large and very slender rings as Martin Plate 14 hardly occur in our material, and animals circumscribed by these slender rings, as shown by Martin Plate 14: 1, 3—7, are never seen among the Ordos bronzes. Knives with the blade sharply bent forward, as shown notably in Martin Plate 12, are scarcely ever encountered in the Ordos group. Openwork handles, Martin Plate 19, are hardly met with in our material, with the single exception of our II: 5, which closely resembles Martin 12: 13. Animals on the top of the handle, which are very common in the Minoussinsk province to judge from Martin Plate 16, are very scarce in the Ordos province.

On the other hand, such backward-curved knives as our II: 6, 7, which are quite common in our material, are hardly represented at all in the Minoussinsk collection.

In spite of the striking parallels between the numerous knives of the two provinces, it would in many instances be easy to tell whether a knife came from the Minoussinsk or the Ordos area. At any rate, the mere abundance of knives in the Sibero-Mongolian and the Sino-Mongolian borderlands distinguishes these two provinces from the Euxine province, where such knives are absent altogether or are at any rate very scarce.

Some of the simpler specimens illustrated in Plates I—V are one-sided, such as I: 5, which shows elevated marginal ridges only on the side reproduced, whereas the other side is entirely flat. The same is the case with III: 4 and IV: 3, which are entirely smooth on the reverse side. There are several other one-sided knives in our collection, which have not been reproduced. A common feature of them all is that the left side is always the decorated one and the right side the undecorated. A reasonable explanation of this fact may be that the left side is always shown when the knife is lying in the palm of the right hand.

Other knives, such as I: 6, III: 1 and V: 4, are decorated on both sides, but the patterns are different. The reverse side of I: 6 shows only upon the handle an empty parallelogram bordered by raised ridges. In this case also it is evident that the left side is the favoured one. III: 1 is almost similarly decorated upon both sides of the handle, except that the two rows of V-shaped figures on the left side are turned upwards with the apex towards the ibex head. V: 4 is decorated on both sides of the handle; the left side has a geometrical zigzag design, the right side an interesting animal design bordered at both ends by zigzag lines.

We now turn to the description of the individual knives.

PLATE I.

All the objects in this plate are reduced to  $\frac{1}{3}$  of natural size.

Fig. 1. (K. 11282: 40.)<sup>1)</sup> Bought in the Ordos desert in 1930, between Shenmu and Tokoto.

Knife with handle and blade forming one continuous curve. The top of the handle decorated with an ibex head, the muzzle of which shows some similarity to that of the elk. (compare V: 1). Both edges of the handle thickened, the back 5 mm. thick. Both sides of the handle show a medium "nerve" with transverse ridges, 2—3 mm. apart.

Green patina with calcareous incrustation. Length 196 mm.

Fig. 2. (K. 11005: 13.) Bought in N. Shansi, Tatung in 1926.

Knife with the edges of the handle and back of blade thickened. Top of handle crowned with two rings, each with a knob on the top. Left side of handle with transverse lines. Surface smooth, with thin greenish patina. Length 168,5 mm.

Fig. 3. (K. 11036: 15.) Larson collection II. Said to have been collected in the Ordos desert.

Knife with the sides of the handle strongly broadened, the latter crowned with a flattened ring, slightly broader (7.5 mm.) than the sides of the handle. (6 mm.). Point of the blade slightly curved backwards. Surface of the blade very smooth, with traces of thin green patina. Length 184 mm.

Fig. 4. (K. 11248: 31). Karlbeck 30/31: 151. Bought in Peiping.

Knife with handle elliptical in cross-section. Top of handle crowned with the bent neck and head of a wild ass, below which an oblique field of transverse

<sup>1)</sup> K-numbers refer to the catalogue of M. F. E. A.

lines. On the neck of the ass a row of oval dots. Decoration the same on both sides.

Blade much wider (17 mm.) than the handle (11 mm.). Back of blade 4 mm. broad. Spots of green patina. 188 mm. long.

Fig. 5. (K. 11283: 5.) Karlbeck 30/31: 82. Bought in Inner Mongolia in 1930.

This is the one single specimen in our collection that may be regarded as one of the objects named sickles, which are illustrated in Martin Plate 10. Nevertheless, it seems probable that our object is more of a true knife, as it has a handle just like many of the undoubted knives. This handle has raised edges, of which the dorsal one continues as the back of the blade with a width of 6 mm. The specimen belongs to the one-sided type with raised edges on the right side only, the left side being absolutely smooth. At the top of the handle there is an irregular hole, much larger than on any of the sickles illustrated by Martin. Surface smooth with a beautiful deep water-green patina. 163 mm. in length.

Fig. 6. (K. 11003: 89.) Larson I. Reported to have been found in the Ordos desert.

Knife with distinctly demarcated handle. Base of the handle 12, base of the blade 16 mm. broad. At the top of the handle a large hole, rounded rectangular in shape. Right side of the handle decorated with transverse lines, about two mm. apart. At the base of the handle two triangles in sunken relief. On the other side of the handle two transverse dots. Below the large hole a transverse line at the base of the handle and between these a long sunken rectangular field bordered by rounded ridges.

Fig. 7. (K. 11003: 85.) Larson I. Reported to have been found in the Ordos desert.

Knife with the blade bent backward and with the handle distinctly marked off from the blade. Base of the handle 18 mm. wide. Base of blade 32 mm. At the top of the handle two strong rings, which are continued as raised borders on both sides of the handle. The dorsal ridge is continued as the back of the blade, the ventral ridge turns in almost at a right angle, delimiting the base of the blade. The central surface of the handle is perforated with three irregularly triangular holes. 156 mm. in length.

#### PLATE II.

All the figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 10304.) Bought in Peiping 1926—27.

Top of the handle crowned with a bird's head with large eye and curved beak. Under the head a triangular hole.

The handle 13 mm. broad, flatly elliptical in cross-section.

Base of the blade 17 mm. broad. The back of the blade 5 mm. wide. Surface very smooth, greenish gray with very thin patina. 210 mm. in length.

Fig. 2. (K. 11036: 25.) Larson collection II. Said to have been bought in the Ordos desert.

Top of the handle crowned with an oval ring. The central part of the blade is relatively thin, but on both the dorsal and the ventral side there are broad marginal ridges, attaining a maximum width of 6 mm. on the dorsal side at the junction between handle and blade. At the base of the handle there are three narrow transverse ridges. In the sunken field forming the median part of the handle there is on either side a central nerve from which project faint transverse ridges, which on the right side are very uniformly distributed but on the left side form groups of 3, 4 or 5. Surface smooth, dark-green. Length 216 mm.

Fig. 3. (K. 11000: 379.) Sirén collection No. 14.

Top of handle crowned with a ring, in the centre of which is a cross. The ring is not closed downwards but coalesces with the ridges bordering the handle. The dorsal ridge continues at the back of the blade. (Width 6 mm. in the broadest part.) Median part of the handle only 1.5 mm. thick. Surface beautifully smooth with a thin coating of dark-green patina. 200 mm. long.

Fig. 4. (K. 10655: 1.) Shansi. Ping-yao-hsien, Hsiang-ying-tsun, 1926.

Knife of very simple type. The handle with an elongated triangular hole which on the left side is continued downwards in a deep groove in the handle. Cross-section of handle flattened elliptical. Thickness of blade regularly tapering from the broad back to the edge. Multicoloured patina of red and green. 204 mm. in length.

Fig. 5. (K. 11283: 7.) Karlbeck 30/31: 88. Bought in Inner Mongolia, 1930.

Small knife with the short blade bent backwards. On the top of the handle a forward projection. The handle perforated with four large oval holes. The blade is obtusely terminated. Surface shiny black and smooth. 99 mm. in length.

Fig. 6. (K. 11211: 13.) Larson collection III. Reported to have been obtained in the Ordos desert.

Top of the handle has a square, rounded bar, which is possibly a degeneration of an animal design. Below this square bar an irregularly triangular hole. Median part of handle only 1.5 mm. thick with thickened margins, of which the

dorsal one is 4 mm. wide, the ventral one only 3 mm. wide. The blade is slender and bent backwards in a gentle curve. Surface shiny black and smooth. 138 mm. in length.

Fig. 7. (K. 10602: 22.) Hopei, Tsun-hua-hsien, 1927.

Small knife with the short handle crowned with a large ring. Median part of the blade only slightly more than 1 mm. in thickness. The thickened margins 3.5 mm. wide. On the left side the median part of the blade shows a faint pattern of diagonal transverse lines. The blade sharply bent back and upwards with squarely cut end. Greenish patina and sandy incrustation. Length 95 mm.

PLATE III.

All the objects  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 11248: 21.) Karlbeck 30/31: 69. Probably bought in Peiping.

Long knife with an ibex head at top of handle. Handle flat with only slightly projecting margins. The flat surface between the margins decorated with two rows of angular figures. On the right side these two rows are turned different ways. On the left side the top of the angles are in both rows turned upwards. Back of knife 5 mm. broad at the junction between handle and blade. Blade uniformly tapering from the thick back towards the edge, which is straight and well preserved. Surface dark-greenish. 245 mm. in length.

Fig. 2. (K. 11248: 38.) Karlbeck 30/31: 170. Probably bought in Peiping.

Knife of an unusual type. Curved handle, at the top of which there is an irregular ring. Inside the ring is an irregular projection of very thin metal. The handle with thickened edges, which are 5 mm. wide. The flat median part of the handle only 1 mm. thick, on both sides provided with a diagonal transverse line pattern.

The blade is very unusual in shape, being 23 mm. broad at the base and 32 mm. near its rounded end. Surface smooth, dark-greenish. Length 225 mm.

Fig. 3. (K. 11000: 376.) Sirén collection No. 11.

The whole knife, handle and blade, bent in one gentle curve with dorsal convexity. Handle capped with an oval plate, 33 mm. long and 20 mm. broad. The top of this plate slightly convex. Below the plate and attached to the handle is a loop. The handle is slightly thinner in the median part, which is decorated with three longitudinal raised lines. The thickened edges of the handle 4.5 mm. broad. At the junction of handle and blade there are three impressed triangles with points turned downwards. Metal yellow. Dark surface-coating partly worn off. Length 214 mm.

Fig. 4. (K. 11000: 378.) Sirén collection No. 13.

Back of blade 5.7 mm. broad. Both blade and handle tapering towards the ventral side. Near the top of the handle a triangular hole. Right side of handle with a characteristic impressed decoration consisting of oblique lobes, which are turned upwards on the dorsal but downwards on the ventral side. Between these lobes there is a double wave-line, which is the continuation downwards of the edge of the triangular hole. Left side of handle quite smooth.

Handle passing imperceptibly into the blade. Surface blackish, smooth. Length 204 mm.

Fig. 5. (K. 11282: 37.) Bought in the Ordos desert in 1930, between Shenmu and Tokoto.

Broken handle of knife crowned with a beast's head with two perforations, one through the eye, the other through the lower jaw. Multi-coloured patina of red and green.

Fig. 6. (K. 11057: 101.) Larson. Said to have been found in the Ordos desert.

Broken-off knife-handle. The lower part of the instrument has been sharpened to chisel shape. It is crowned with a somewhat irregular ring. The handle has thickened edges. The median part on the left side smooth, on the right side decorated with bustard-like birds, of which four are complete but the fifth was partially destroyed when the handle was broken and sharpened. Only slight traces of patina.

Fig. 7. (K. 11003: 104.) Larson collection I. Reported to have been found in the Ordos desert.

Broken knife-handle, irregularly square-cut at the top, flattened elliptical in cross-section. Decorated with a system of four lines, which together make two horse-shoe shaped figures of which the upper ones on either side of the handle are turned backwards and the lower forwards. These two horse-shoe groups of lines are connected by two diagonal lines, linking the bases of the two groups of four. Multi-coloured patina.

#### PLATE IV.

All the figures reproduced in natural size.

Fig. 1. (K. 11248: 8.) Karlbeck 30/31: 38. Bought in Peiping.

Knife with a ring crowning the handle. Edges of the handle thickened. The sunken field forming the median part of the handle shows on either side a row of bustard-like birds in low relief. On the right side there are six such birds, on

the left side only five. Surface fairly smooth, only slight traces of patina. Length 169 mm.

Fig. 2. (K. 11248: 13.) Karlbeck 30/31: 58. Bought in Peiping.

In shape much resembling IV: 1, but the blade at the base hardly broader than the handle. Left side of handle smooth, undecorated and with rounded edges. Right side with two sunken fields separated from each other by a narrow ridge. In each of these fields there is an animal figure depicting the fore-part of a wild ass somewhat resembling the four figures in XXX: 5 but much more stylized. At the base of the handle is a small triangle in sunken relief. No patina; yellow metal. Length 179 mm.

Fig. 3. (K. 10303.) Bought in Peiping 1926—27.

Handle crowned with a transverse projection, which is probably a degenerate animal figure. Below this transverse projection an oval hole, situated on the ventral side of the handle. Handle with broadened edges. In the lower median field, which is not distinct from the handle, on either side three poorly drawn animals of indefinite kind. Near the base of the blade an indentation on the edge. Surface blackish. Length 194 mm.

Fig. 4. (K. 11225: 12.) Larson VI. Said to have been obtained in the Ordos desert.

Two views of a knife, in shape much resembling IV: 3. The elongated knob on the top of the handle like that of IV: 3, but stouter and with a slender middle portion. This knob is most probably a completely degenerate full figure of an animal. Handle flattened to an elliptical shape in cross-section, decorated on both sides with animal figures (deer?) in archaic style. Right side with three animal figures, left side with two animal figures and a transverse-line pattern. Between the three animals on the right side there are two groups of roof-like lines, evidently part of the transverse-line pattern, which is more fully developed on the other side. Point of knife broken; present length 160 mm.

#### PLATE V.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 10727.) Bought from Dr O. Burchard, Berlin. Reproduced by Dr. A. A. Breuer in Jahrbuch der asiatischen Kunst, Band II, 1925, Taf. 31, fig. 23.

An extravagant baroque type closely related to V: 2 and more distantly to the dagger-like knife shown in V: 3. The handle crowned with a heavy animal head of most extraordinary shape. The head itself resembles that of an elk with big flat muzzle and huge nostrils. Viewed from the front the eyes are very protruding.

From this head rise large, strongly curved horns, most closely resembling those of an argali sheep. The end of the horns expanded to a flattened knob, which is connected with the muzzle by a bar. The eye consists of a malachite bead, the concentric structure of which is skillfully taken advantage of to give an eye-like impression. The knob at the end of the horns also carries a malachite bead. This arrangement gives the impression of two pairs of eyes, one in the natural place, the other at the end of the horns. Upon the throat of the animal there is a loop, probably for the attachment of a streamer.

The handle is slightly curved and its dorsal curvature continues in that of the back of the blade. Cross-section of the handle flattened ovoid. Decoration on both sides exactly the same. Four transverse lines continued on the back of the handle. Below these transverse lines a long field occupying nearly the whole width and length of the handle. This field has a central smooth portion, slightly elevated above the rest. On the sides and below the central portion is a frame consisting, on the sides, of three, and below of two rows of square dots, which are approximately on a level with the smooth central portion and equally smooth edges of the handle. At the junction between handle and blade there are seven sawlike indentations on each side and on the back three indentations, making a total of 17, marking the base of the blade. The basal part of the blade is the thickest portion of the knife with a marked ventral projection. The back of the blade has a low dorsal ridge. The broad back of the blade passes rather abruptly into the main portion of the blade, which is relatively thin.

Metal yellow, surface smooth, of a beautiful greenish colour.

This remarkable specimen was bought by professor O. Sirén for our museum at an auction in Berlin arranged by Dr. O. Burchard. Its provenance is not definitely known, but it is very probable, for reasons which will be given in a paper on the "fibulae", that it came from the Sino-Mongolian borderlands.

Fig. 2. (K. 11003: 103.) Larson collection I. Reported to have been found in the Ordos desert.

Handle of a knife very much like V: 1, showing the clearly elk-like shape of the muzzle. Upon the throat a loop, which is broken off. Decoration of handle consisting only of seven narrow transverse bands. This group of transverse bands is on both sides bordered by narrow saw-like indentations in sunken relief. Yellow metal, multi-coloured patina.

Fig. 3. (K. 10269.) Bought in Peiping in 1926—27.

Dagger-like knife related to V: 1, 2, with a symmetrical handle like a true knife, but double-edged like a true dagger.

Handle crowned with a rattle capped with a strong circular disc. Inside the rattle cage a small stone pebble. Immediately below the rattle on the convex side

of the handle a loop. Handle flatly elliptical in cross-section without any decoration.

Blade with transverse projection at the base and a strong median ridge.

Surface of handle and blade beautifully smooth, dark greenish. 298 mm. in length.

Fig. 4. (K. 10308.) Bought in Peiping 1926—27.

A knife of singular and apparently archaic type, as evidenced also by its crude and irregular shape. The top of the handle is attenuated, and at the very end there is a small curl, somewhat reminiscent of the Scandinavian bronze-age "razors" that are illustrated by Montelius in "*Minnen frdn vdr forntid*" Nos. 1242—1247. The handle is decorated with geometrical and animal figures in relief. The animal figures are very archaic and reminiscent of rock-carvings.

The right side is decorated simply with groups of zig-zag lines, three groups of two lines and one group of three.

The left side of the handle shows at both ends traces of the geometrical zig-zag pattern. The central portion of the decoration consists of three animals, two seen fully from the side; the third animal figure is difficult to explain. It shows one head with long ears like the two others, but two tails; one to the left and the other to the right. Possibly the artist intended to depict a group of two animals.

The handle passes imperceptibly into the blade, which is slightly broader than the handle. Red copper-like metal, green incrustation with grains of quartz-sand. 258 mm. in length.

#### DAGGERS.

The total number of daggers in our collection is 67.

On comparing our daggers with Plate 21—24 of Martin's "*L'âge du bronze*", we note certain dissimilarities between the Ordos and the Minoussinsk areas. Daggers such as those illustrated in Plate 21, 22 lower row, 23 and 24 lower row, have very few parallels in the Ordos area. The nearest approach in our material to the daggers with a simple crossbar at the top of the handle is a specimen very similar to Martin 23: 5. Daggers of the antennae-type, Martin 22 upper row, are the most common in our collection.

Our VI: 3 is a singular type bought in Shanghai. It is only a conjecture that this dagger belongs to the Ordos group. Another unique type is IX: 3, most probably belonging to the Ordos bronzes. As a whole the Ordos daggers seem to be more richly decorated with animal designs than is the case with the Minoussinsk style; see our VIII: 2 and IX: 1, 2.

Plate VIII: 3, 4 are interesting mixed types. Their general shape, with a roof-like guard, and the animal design crowning the handle are entirely in accordance with the Ordos style. The three animals adorning the sunken central field of

the handles are orthodox Chinese designs. Here we have a blending of Chinese and nomad patterns similar to the instance reproduced by me in Bulletin M. F. E. A., vol. I, page 147, except that in the last-mentioned case the designs of the pommel and the guard are Chinese, and the wild asses in the central field of the handle are typically animal style.

PLATE VI.

All figures half natural size.

Fig. 1. (K. 11036: 1.) Larson collection II. Said to have been bought in the Ordos desert.

Dagger of yellow bronze. The hilt is crowned with two antennae, which curve inwards until they meet. Most likely these antennae are a geometrical deterioration of two bird-heads facing each other. On both sides the antennae show a central furrow and thickened margins. Both furrow and margins are continuous, running across the top of the hilt from one antenna to the other. The hilt has thickened edges and a central ridge with deep furrows between. In the middle-part of the hilt however this system of three ridges and two furrows is interrupted by a smooth field with an angular incision to the left. This smooth field with the incision to the left is the same on both sides of the dagger.

The guard is in the shape of two curved projections, which are certainly degenerations of bird's-heads like VI: 2. These projections show raised ridges and furrows, which are of different patterns on the two sides of the dagger.

The blade slopes uniformly down either side from a central thickest portion. No patina, the yellow bronze for the most part showing where it is not covered with black. Length 311 mm.

Fig. 2. (K. 10040.) Bought in Peiping 1926—27.

The pommel is crowned with two antennae, which curve inwards until they touch the base of the pommel without touching one another. At the base the pommel exhibits four ridges with three furrows between. On the antennae they are reduced to two marginal ridges with a central furrow. The handle shows two marginal and one central ridge with deep furrows between. This system of ridges and furrows does not cover the uppermost five and the lowermost ten mm. of the handle, these parts being smooth with flattened elliptical cross-section. The guard is formed of two projections in the shape of "bird's-heads" with a very big "eye" consisting of one central dot surrounded by two approximately concentric ridges. The beak of the bird's-head has a distinctly downward curve.

The blade shows three zones, two lateral and one central. The two lateral zones are smooth and raised somewhat above the central zone, which shows a

median "nerve" and numerous minute elevated dots, giving to the surface a granulated appearance. Poor greenish patina. Length 390 mm.

Fig. 3. (K. 11055: 21.) Karlbeck 30/31: 392. Bought in Shanghai.

No pommel, handle hollow. Uppermost part of handle in the shape of a truncate cone with widest part at the top. The rest of the handle consisting of 16 annular ridges, smooth and passing gradually into the interposed furrows. In the uppermost part of the handle between the first and second ridge an irregular hole in the same plane as the blade.

Guard in the shape of two sloping lamellae, separated by the continuation upwards of the thickened central part of the blade. These lamellae have a thickened margin and short oblique ridges in their central field.

The blade has a thickened central part, the lateral portion being thinner. Surface blackish and smooth. Length 309 mm.

#### PLATE VII.

All the objects  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 10270.) Bought in Peiping 1926—27.

Pommel in the shape of a flattened ring. Openwork handle; within a somewhat solid 5 mm. frame, five diagonal cross-bars considerably thinner than the frame. The pommel forms the basal part of the frame of the handle. Its shape is a simple curved crossbar projecting 5—6 mm. outside the blade.

The middle of the blade forms a ridge sloping somewhat steeply and passing into the outer thin part of the blade.

In sheltered places spots of beautiful verdigris; for the rest, the surface is nearly black with faint indications of the yellow bronze.

Length 242 mm.

Fig. 2. (K. 11090: 51.) Karlbeck 28/29: 580. Bought in Suiyuan.

Pommel in the shape of a rounded sausage-shaped crossbar with five transverse furrows. This crossbar is very likely a degeneration of a four-legged animal, such as those that crown the handle of many daggers of the Animal Style.

In the uppermost part of the handle an elongated hole. The handle flattened elliptically in cross-section, decorated on both sides with V-shaped incisions.

Guard entirely rudimentary, consisting of two narrow and irregular appendices, fastened with their upper end at the base of the handle and with their lower end touching the base of the blade.

The last V-shaped ridge of the handle projects down the blade in the shape of a strong median ridge, double the thickness of the rest of the blade. Surface greenish with abundant particles of adhering sand.

Length 294 mm.

Fig. 3. (K. 11276: 37.) Karlbeck 30/31: 536. Bought in Peiping.

Handle with pommel in grated openwork. The complicated shape of this open-work can be more easily seen from the picture than described. It need only be added that, as is partly seen on the picture, there are crossbars in the interior to support the slender longitudinal and curved bars on the surface.

These supporting bars in the interior run not only in the median plane of the knife, but there are also short supporting bars running at an angle of 90 degrees to the long supporting crossbars clearly seen in the figure.

Guard in the shape of a simple undecorated crossbar.

Handle uniformly sloping to both sides from the central portion. Rich patina, green and reddish.

Length 238 mm.

PLATE VIII.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 10266.) Bought in Peiping 1926—27.

Pommel consisting of a quadruped, probably a feline animal.

Handle flattened elliptically in cross-section and passing imperceptibly into the blade.

Guard indicated by two bird-heads with big eyes and curved beaks. There is a space of 5 mm. between the point of the beaks and the base of the blade.

The central and by far broadest part of the blade relatively thick with thin edges.

Thin green patina.

Length 265 mm.

Fig. 2. (K. 11248: 6.) Karlbeck 30/31: 37. Bought in Peiping.

Pommel consisting of two "bird-heads", the beaks of which form the inward-curved antennae.

The handle decorated with three pairs of bird-heads with beaks strongly curved at the end. Between each pair of bird-heads there is a large oval hole through the handle.

Guard formed by two bird-heads.

Blade uniformly sloping from the thickened median line towards both edges.

Multi-coloured patina of green and brownish red.

Length 295 mm.

Fig. 3. (K. 10268.) Bought in Peiping 1926—27.

Pommel in the shape of a mammal's head, the "horns" of which form, with the base of the pommel, closed rings.

Handle with slightly thickened margins. The field inscribed between the margins, the pommel and the guard occupied by three "tigers" of Chinese type, in alternating positions.

Guard formed as a roof-shaped crossbar.

Blade uniformly sloping from the thickened median line towards both edges. Only slight traces of patina. Yellow bronze showing distinctly in many places.

Length 302 mm.

**Fig. 4. (K. 10692: 3.) Shansi, Yang-kao-hsien, Cheng-hung-kou.**

Pommel in the shape of a ring in which are inscribed two crouched animals opposing each other.

Handle with narrow, slightly thickened margins. The field bordered by the margins, the pommel and the guard occupied by three "tigers" of Chinese type, all turned the same way. These "tigers" are not angular like those of VIII: 3, but rounded with very clumsy bodies and muzzles.

Guard strongly curved like a roof.

Handle with a thickened medium line, from which there is a concave slope towards the edges.

Multi-coloured patina of green and brownish red.

Length 288 mm.

#### PLATE IX.

All figures  $\frac{1}{2}$  of natural size.

**Fig. 1. (K. 11248: 20.) Karlbeck 30/31: 68. Bought in Peiping.**

Pommel in the shape of a pig with raised volutas upon the legs.

Handle flattened rectangular in cross-section, with four longitudinal ridges.

Guard in the shape of two heads with big ears of indeterminate species.

Blade with a strongly thickened median line with concave slopes toward the edges. Surface blackish with crusts of verdigris.

Length 274 mm.

**Fig. 2. (K. 11248: 57.) Karlbeck 30/31: 237. Bought in Peiping.**

Pommel in the shape of two twisted horses facing each other. The fore-legs form the base of the pommel. The hind part of the body with the hind legs slung upwards, so that the hind hoof nearly touches the ear.

Handle with four ridges with three deep interposed furrows.

Guard in the shape of two mammal-heads joined at the neck.

Blade with a thickened median line with concave slopes towards the edges. Surface black, smooth.

Length 262 mm.

Fig. 3. (K. 10430.) Bought in Peiping 1926—27.

No pommel. Handle made up entirely of two "tigers", executed in the striped manner. (Comp. X: 1 b and XXV: 1.)

The guard is only indicated by dentation upon the base of the blade.

From the thickened median line concave slopes pass into the lateral parts of the blade.

Length 269 mm.

#### AXES AND PICKS.

With reference to this group of arms there seems to exist a certain difference between the Ordos area and the Minoussinsk region. Axes of the type depicted in Plate 7 of Martin's work "*L'âge du bronze au Musée de Minoussinsk*" are very rare in the Ordos area, only one specimen being known to us. Specimens such as figs. 4—6 of our Plate X, somewhat resemble Martin's 7: 2. On the other hand, axes such as X: 1, 2 were never found in Siberia, and an axe such as X: 3 is evidently influenced by the Chinese dagger-axe (*Ko*). Picks such as X: 7, 8 are common to both areas.

#### PLATE X.

All figures  $\frac{1}{2}$  of natural size.

Fig. 1. (K. 11276: 34.) Karlbeck 30/31: 752. Bought in Peiping.

A socketed axe with circular blade. The socket is oval in cross-section  $24 \times 20$  mm. at one end and  $23 \times 19$  mm. at the other. On the back there are two knobs. The blade is decorated with two animals with their heads turned upwards. On the right side X: 1 b, there is a "tiger" of the style which we know from the dagger shown in IX: 3. On the left side a hoofed animal, possibly a pig.

The specimen has a rich and beautiful patina of red oxide and green carbonate.

Fig. 2. (K. 11004: 27.) Bought from Lo Chen-yü. Tientsin 1927.

Axe similar to X: 1, but with long socket.

The socket is horseshoe-shaped in cross-section and very much narrower at the top,  $23 \times 12$  mm. at the bottom and  $18 \times 12$  mm. at the top. At the back of the socket there is a large angular knob, 22 mm. in diam., with a hole of 6 mm. diam. This ring has elevated margins both inwards round the central hole and at the outer circumference. The central raised margin consists of bead-like protuberances. In the sunken field between the two margins there are six cup-like rings, which may have held pieces of turquoise.

The upper end of the socket is thickened. A similar thickened ring runs 7 mm. above the lower end of the socket. At the back of the socket just above this ring there is a loop.

The blade is oval in circumference. From its base two double roof-like figures project over the socket. In the centre of each of these figures there are three small grooved rings. The blade is decorated with a starlike figure having five strongly curved rays. In the centre is a ring. In the middle of this ring is a small grooved circle and five similar small circles are found, one at the base of each "ray".

The decoration is exactly the same on both sides of the blade.

Beautiful multi-coloured patina of red and green.

A very similar specimen is reproduced by Yetts in "*The George Eumorfopoulos collection. Cat. of Chinese bronzes*". Vol. I. Plate LXIX A. 146.

Fig. 3. (K. 11278: 8.) Karlbeck 30/31: 120. Bought in Yülinfu. Probably from the Ordos desert.

Axe with long socket of nearly circular cross-section. At the back of the socket there is a large rectangular knob.

The blade is very much like that of a primitive *Ko*, with a strong central "nerve". Green patina.

Length of socket 76 mm. Length of blade 97 mm.

Fig. 4. (K. 11278: 9.) Karlbeck 30/31: 138. Bought in Yülinfu. Probably from the Ordos desert.

Socketed axe. Cross-section of socket oval, below  $27 \times 17$  mm., above  $22 \times 15$  mm.

From the middle of the socket a high ridge projects into the basal part of the blade. In the upper half of the socket is a circular hole. At the back of the socket there is a large rectangular projecting body with two very big holes with an annular margin.

The blade nearly rectangular in shape.

Surface smooth, blackish with thread-like traces of verdigris.

Length of socket 70 mm. Length of blade 93 mm.

Fig. 5. Karlbeck 30/31: 161. Bought in Peiping.

Socketed axe with rectangular blade and a small knob at the back of the socket. In the centre of the axe there is a big hole surrounded by a double ring with a row of knobs in the interspace. From this hole, with its surrounding rings, three elevated ridges with two rows of knobs between run across the socket. From the big central hole a single elevated ridge runs to the edge of the blade.

In the upper part of the socket there are two transverse elevated ridges and in its lower part three such ridges. An almost identical axe is reproduced by Yetts: *Eumorfopoulos bronzes*, Vol. I, A. 145.

Fig. 6. (K. 11090: 42.) Karlbeck 28/29: 579. Bought in Suiyuan.

Axe with short socket projecting only downwards. The socket is strongly conical, but unlike all the axes described above, wider in the upper part, 29  $\times$  18 mm. at the top, 23  $\times$  14 mm. at the bottom. In the lowest projecting part of the socket there is a hole. On the back of the socket there is a projection, narrowest at the base.

The blade is widest at the edge. From the socket four very strong ridges run right across the blade, two of them forming the margins of the blade.

Smooth green surface, with traces upon the blade of a rather coarse tissue.

Length of the socket 45 mm. Total length of the axe 145 mm. Length of the blade 92 mm.

Fig. 7. (K. 11057: 84.) Larson. Said to have been found in the Ordos desert.

Short pick with wide socket. Beautiful multi-coloured patina of red and green. Diam. of socket 20 mm.

Length of socket 18 mm. Total length of the pick 78 mm.

Fig. 8. (K. 11033: 41.) Karlbeck 28/29: 38. Bought in Peiping.

Long pick with two-facetted edge behind and three-facetted point in front. Multi-coloured patina of red and green.

Diam. of slightly oval socket 20  $\times$  18 mm.

Length of socket 20 mm. Total length of the axe 174 mm.

#### BELT BUCKLES.

##### PLATE XI.

All figures  $\frac{1}{8}$  of natural size.

Fig. 1. (K. 10679: 4.) Bought in Shansi, Tatung 1926.

Buckle consisting of two circular plates strongly connected. The one is perforated by a big central hole framed in by four concentric elevated rings. This ring-shaped disc is provided with a hook opposite the junction with the other disc. This hook is 8 mm. high and curved slightly outwards.

The second disc is smooth with a broken loop at the back.

Fig. 2. (K. 11003: 481.) Larson I. Reported to have been found in the Ordos desert.

Buckle consisting of an annular disc with a hook at one side and opposite the hook a big loop-shaped projection. The annular disc carries two fields of four filled-in triangles.

**Fig. 3. (K. 10652: 2.)** Bought in Shansi, Tai-kou-hsien, 1926.

Buckle of approximately the same shape as fig. 1, but the perforated disc being the larger of the two.

Both discs provided with elevated margins. Instead of the central hole in the big disc there is in the small disc a central raised field.

Upon the big disc an elevated wavy zig-zag band runs between the two marginal rings.

Upon the inner marginal ring there is a small hook, only 4 mm. high. On the back of the small disc is a strong transverse loop.

**Fig. 4. (K. 11003: 484.)** Larson I. Reported to be from the Ordos desert.

Buckle in the shape of a ring with a strong hook formed like a bird's head. Opposite the hook a nearly rectangular projection. The ring has somewhat thickened margins and between them two rows of raised dots. The two radial parts of the rectangular projection have single rows of dots.

**Fig. 5. (K. 11211: 245.)** Larson III. Reported to be from the Ordos desert.

Buckle, in general shape like fig. 4, but with relatively feeble hook and two rounded projections filling the back part of the big central hole. Each of these two figures show a beak-like curved elevation.

**Fig. 6. (K. 11071: 7.)** Karlbeck 28/29: 459. Bought in Peiping.

Buckle in the shape of a slender ring decorated with two rows of dots between the margins. A strong hook in the shape of a bird's head, and opposite the hook there is attached to the ring a low conical button with a loop on the back.

Beautiful green patina.

**Fig. 7. (K. 11072: 9.)** Karlbeck 28/29: 500. Bought in Peiping.

Heavy buckle consisting of a broad annular disc with a low strong hook and, opposing it, a strong fan-shaped projection. Between the raised margins of the annular disc a system of double spirals raised to the same level as the margins. Profuse patina of reddish-brown oxide and green carbonate.

**Fig. 8. (K. 11036: 279.)** Larson coll. II. Reported to be from the Ordos desert.

Strong buckle with powerful hook and opposing it a square projection. The central hole of the buckle is circular, the one in the projection tending to a pentagonal shape. The annular disc is attenuated below the hook. It carries six tumular knobs, each with five elevated dots, the whole reminiscent of a kind of glassbeads found in the Han tombs.

Fig. 9. (K. 11276: 9.) Bought in Yülinfu. Probably from the Ordos desert.

Buckle in general shape like fig. 2, but stronger and with triangular hole in the projection. The space between the raised margins of the annular disc is filled with two interlacing wavy lines.

Fig. 10. (K. 11248: 41.) Karlbeck 30/31: 181. Bought in Peiping.

General shape like fig. 7, but the projection nearly square with quadratic hole. Also the big central hole is something between a square and a circle. Disc covered with double wave lines, much like fig. 7. Patina appearing as small green spots upon the red oxide.

Fig. 11. (K. 10660: 5.) Bought in Shansi, Hung-tung-hsien, 1926.

Shaped like fig. 2, but the annular field filled with four raised boomerang-shaped figures. Smooth green patina.

PLATE XII.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 11004: 13.) Bought from Lo Chen-yü, 1927.

Buckle in the shape of an S-coiled double snake. At first glance it seems that the two snake-heads have one continuous body, but on closer examination there are found to be two tails lying side by side. Moreover, the decoration of the two bodies is different, one having on either side of the longitudinal dorsal line two rows of lines running obliquely backwards. The other body is adorned on both sides of the dorsal line with double rows of alternating rounded dots.

When the buckle is turned, there are distinct heads with eyes at the back and the same adornment on the bodies, except that the decoration is inverted, so that the body is striped on one side and dotted on the other.

At the back of the buckle there are two very strong hooks in the shape of duck's heads, one in the centre of the buckle, the other in the middle of the body of one of the snakes.

Fig. 2. (K. 11033: 39.) Karlbeck 28/29: 58. Bought in Peiping.

Buckle in the shape of a snake with tail curved into a shape approximately symmetrical with the head.

On the middle of the body is a strong hook and on the back a loop at the junction between head and tail. The snake's body is decorated with rib-like ridges bent slightly backwards, running to both sides of the dorsal line.

Fig. 3. (K. 11248: 5.) Karlbeck 30/31: 34. Bought in Peiping.

Large buckle, the central design of which is a bulls' head. On either side of this head, but a little below, are three openwork leaf-like figures. Below the

muzzle of the bull is a large triangular opening. Above the head is the largest of all the opening, framed in by the "horns". On the posterior part are two narrow rectangular openings, probably for attachment to the belt.

Rich patina in oxide-red and predominantly green carbonate.

Length of buckle 68 mm.

**Fig. 4.** (K. 10341.) Bought in Peiping 1926—27.

Small buckle with the main body ring-shaped. The back of the ring is in the shape of two opposed wild asses' heads. Opposite these two heads there is a very strong hook in the shape of a bird's head.

The big ears of the wild asses form the sides of the rectangular projection, which served for attachment to the belt.

The central ring and the big ears filled with double rows of alternating elevated dots.

**Fig. 5.** (K. 11247: 18.) Larson VII, 1930. Reported to be from the Ordos desert.

Belt-hook, the main feature of which is two goose-like birds opposing each other, with strongly bent necks and slanting wings. The hook is nearly worn down, and the transverse bar for attachment to the belt is worn very thin.

**Fig. 6.** (K. 11033: 5.) Karlbeck 28/29: 59. Bought in Peiping.

Ring-shaped buckle with a pig on one side and opposite to it a strong hook shaped like a bird's head. On the reverse of the pig is a broad loop for attachment to the belt. The ring is covered with a meandering design, which is largely worn out.

**Fig. 7.** (K. 11090: 20.) Karlbeck 28/29: 719. Bought in Peiping.

Unusually large buckle with an inlay of a green soft stone in the upper central half. On both sides of this inlaid work are two big heads of monsters. For the rest the design is obscure including the two leg-like figures that form the lateral parts of the posterior portion of the buckle.

Length of the buckle 87 mm. Width 59 mm.

**Fig. 8.** (K. 10275: 3.) Bought in Peiping 1926—27.

Buckle consisting of two Tao-tieh monsters facing one another. Each monster consists of the big head with slanting eyes and ears and furthermore two legs with three claws on each foot. Between two of the feet sits the hook. On the opposite side of the buckle there are two low projections upon the legs. Smooth green patina.

Fig. 9. (K. 11033: 10.) Karlbeck 28/29: 43. Bought in Peiping.

An imperfect specimen of the general type shown in XIII: 5 with a long hook to the right and a loop below. Both the long hook and the loop, as well as the button on the back, are lost.

The very conspicuous design consists of two "dragons", a long-necked one to the right and a short-necked one to the left. The latter dragon is biting at the base of the long neck of the other animal, whose head rests between the curled tails of both animals. The inner fore-feet of the two dragons are drawn in naturalistic design with four fingers. The outer fore-feet of both animals are strongly stylized and terminate in a small ring. Similar rings are also on the hind feet and at the end of the tails. Over the shoulders as well as upon the loins there are large semicircular rings. All these circular parts (including eyes and nostrils), as well as the large semicircular rings, may have held gems.

Fig. 10. (K. 11282: 26.) Bought in the Ordos desert between Shenmu and Tokoto 1930.

Buckle, in its general outline similar to fig. 4. The ring consists of a single much attenuated carnivore, the muzzle and tail of which come so close together that they nearly complete the circle. From the top of the head and the base of the tail there projects a rectangular loop for attachment to the belt. Opposite this loop, upon the middle of the carnivore's body, is a strong hook, somewhat in the shape of a bird's head.

The whole object is so much worn that it has acquired a beautiful polish.

Fig. 11. (K. 11090: 21.) Karlbeck 28/29: 715. Bought in Peiping.

Buckle, in style highly reminiscent of fig. 9. but with a different pattern, the main features of which are two strong bird-heads opposing each other and a large monster's head, which in the figure forms the uppermost part of the buckle. The lowest part of the buckle, carrying the hook, consists of a transverse bar attached to the bird's necks in the shape of two small carnivores' heads.

This buckle was not attached to the belt but apparently to the end of a double chain as shown in XIV: 2.

Fig. 12. (K. 11033: 44.) Karlbeck 28/29: 46. Bought in Peiping.

Heavy buckle with a central rectangular hole. Round three sides of this central rectangular frame there are five heavy carnivores ("bears", or rather "tigers", to judge from the long tail). Below the central "bear" there are four circles, and behind these circles on the back of the buckle a very strong loop for attachment to the belt. At the other end of the rectangle is the hook in the shape of a bird's head.

Length of the buckle 57 mm. Width 49 mm.

**Fig. 13.** (K. 11055: 11.) Karlbeck 28/29: 494. Bought in Peiping.

Buckle identical with that at the end of the chain XIV: 2. The central ring is made up of the bodies of three animals: two carnivores facing one another, and, with its back resting upon the carnivores' heads, a small wild ass. To the feet and the nose of this ass is attached a loop decorated with a hyena-like head. Opposite the loop and attached to the ring is a very strong hook, in the shape of a bird's head with distinct eye and beak.

PLATE XIII.

All figures  $\frac{2}{3}$  of natural size.

**Fig. 1.** (K. 11276: 30.) Karlbeck 30/31: 576. Probably bought in Peiping.

A representative of the rare group of "fibulae" occurring among the Ordos bronzes. The essential part of this fibula is a double-turned needle touching a transverse pin but without the support of the encompassing loop that is characteristic of the fibulae of the Western world.

The basal part of the needle is adorned with a median line, at each side of which there is a row of square protuberances. The bent portion and the distal straight part of the needle are smooth. To the base of the needle is attached the transverse pin, which at the junction is decorated with triangular incisions. The head of this pin (which is hollow in the front) carries a short crossbar adorned at each end with a turquoise eye. Above this bar is a bent neck carrying a small monster's-head with turquoise eyes. Two curved supports run down from this crossbar to the basal part of the pin. Behind these supports there stand upon the upper side of the pin four circular projections with minute sockets.

Smooth black surface.

**Fig. 2.** (K. 11071: 12.) Karlbeck 28/29: 389. Bought in Peiping.

Belt-hook of Chinese shape, but adorned with a fox's head typical of the Animal Style. The whole face of the fox is granulated with small protuberances. Greyish-green surface.

**Fig. 3.** (K. 11248: 33.) Karlbeck 30/31: 157. Bought in Peiping.

Buckle with two loops and rings. The main feature of the design is a hoofed animal with small ears. This animal rests with the legs folded under the belly and with the head turned backwards. On the back of this large animal is a much smaller one. At the large animal's tail is one loop and the other at the fore-knee. The hook is attached to the animal's neck. On the chest and the loin there are oval holes, but in the eye and the muzzle circular ones. The casting is very porous, specially in the case of the lower ring. Surface a beautiful green.

Fig. 4. (K. 10284.) Bought in Peiping.

Belt-hook of the same type as fig. 5 with a lateral long hook, a loop below and a button hidden under the animal's back. The main feature is a deer in the traditional pose with legs folded under the belly. Loin and chest with large semilunar groove and hole. Circular grooves and holes in muzzle, eye and antler. The long hook projects from the animal's muzzle. The loop is broken.

Fig. 5. (K. 11248: 34.) Karlbeck 30/31: 164. Bought in Peiping.

Belt-hook in all main features like fig. 4, but the design more complex. In addition to the main animal, a stag, there are two smaller hornless specimens, possibly the cow and calf, the cow resting upon the back of the stag, the calf under its throat. In this specimen the long hook projecting from the stag's muzzle, the loop attached to the stag's knee and the large button on the back are all well preserved.

Fig. 6. (K. 11033: 11.) Karlbeck 28/29: 49. Bought in Peiping.

Buckle in the shape of a hooved animal with strong tail, with loop and ring attached to the fore-knee, a strong hook in the shape of a bird's head upon the neck and a strong button hidden behind the loin. The chest and the loin adorned with spirals. Heavy incrustations of copper-oxide and carbonate.

Fig. 7. (K. 11090: 16.) Karlbeck 28/29: 703. Bought in Peiping.

Buckle or belt-hook in general shape closely resembling fig. 6, but with a long hook like figs. 4 and 5. The main design is a tigress with two cubs, the one on the back being licked by the mother, the other under the belly. The first-mentioned cub shows its head in profile, the second with the head en face. Rich incrustation of green and red.

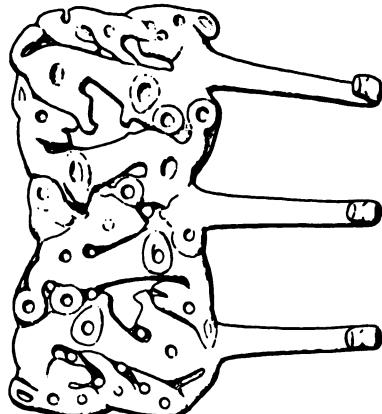


Fig. 1. Interpretation of the triple belt-hook XIII: 9.

Fig. 8. (K. 11248: 7.) Karlbeck 30/31: 35. Bought in Peiping.

Belt-hook in the shape of a tiger with a strong hook projecting from the tiger's neck. Behind the chest there is a button. The tiger has strong canines, wavy stripes and three visible claws. Beautiful smooth green patina.

Fig. 9. (K. 10525.) Bought in Peiping.

A triple belt-hook of unique type. Three hooks and three buttons on the back. The animal-pattern, at first sight very obscure, consists of four "tigers", somewhat like fig. 7.

There are two tigers on each side of the central hook as shown in textfigure 1. Possibly there is a small animal on the back of each of the flanking tigers. Thick incrustation.

## CHAINS.

## PLATE XIV.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 11033: 58.) Karlbeck 28/29: 45. Bought in Peiping.

A double chain attached to a buckle in two parts, connected in such a way that the side-loop of the one embraces the rounded bar of the other. The smaller part of the buckle is nearly square in shape. Two of its sides are more or less cylindrical, one being enveloped by the loop of the other half, the other carrying a strong hook. The two other sides of this piece are in the shape of strongly stylized animal-heads with eye, ear and a long snout. One of these sides is provided with a loop carrying one of the two chains.

The other half of the buckle is provided with two loops, one connecting the two halves of the buckle, the other carrying one of the chains. This part of the buckle shows a rather obscure pattern, the main feature of which is two animals (pigs) opposing each other. In the two chains the rings are smooth but the connecting links adorned with oblique lines and wavy-lines.

Fig. 2. (K. 11248: 51.) Karlbeck 30/31: 214. Bought in Peiping.

Buckle with a double chain, and at the lower end a buckle like XII: 13. The buckle is in the shape of a rectangular frame with a hook upon one of the short sides and a button below the other short side. In the two upper corners there are two long-snouted heads, turning the back to each other. In the centre of the lower side of the rectangle there are two rounded heads facing one another. From the lower corners project two long-snouted heads, which are pierced by holes for the attachment of the chains. The two chains unite in a ring, which is linked to a second ring holding a buckle exactly like XII: 13. The links connecting the rings are on the front side adorned with double-rows of grooves.

Fig. 3. (K. 11090: 173.) Karlbeck 28/29: 662. Bought in Peiping.

Belthook-buckle like XIII: 7, but with two loops underneath for the attachment of double chains.

The main design is a "tiger", from the back of which springs a belt-hook. Behind the belly there is a button. The "tiger" rests upon a snake, the nose of which touches the "tiger's" back. There are strong spirals adorning the chest and loin of the "tiger". Two smaller double spirals adorn the foreleg and one double spiral is seen upon the hind leg. Across the belly runs a vertical field

with oblique lines, and there is a horizontal field with oblique lines across the neck. Upon the lower jaw there is a small spiral and at the base of the hook a square field with triangular design.

The loops holding the chains are covered with transverse zig-zag lines and the joints between the rings carry triangular figures.

An indication as to the use of these double-chains may be found upon a stone Baba figure found by me in Inner Mongolia and reproduced Plate XXXVI.

This male figure carries a belt, at the left side of which a buckle is attached holding two long leather thongs (or possibly chains) for the suspension of a bag (tinder-box?) and the dagger. This is certainly a late representative of the Baba group, but it is quite possible that this double thong represents an old tradition.

#### DISCS AND BUTTONS.

##### PLATE XV.

All figures  $\frac{1}{2}$ , natural size.

Fig. 1. (K. 11003: 504.) Larson I. Reported to be from the Ordos desert.

Pear-shaped disc, slightly convex on the front side and with two vertical and one horizontal loop on the reverse, which is shown in the figure.

Fig. 2. (K. 11036: 280.) Larson II. Reported to be from the Ordos desert.

Front view of an elongated pear-shaped disc with a semi-globular bulb in the upper part. On the back of this bulb there is a nearly vertical bar for attachment to leather or some other substratum.

Fig. 3. (K. 10602: 5.) Hopei, Tsun-hua-hsien, 1927.

Flat disc, entirely undecorated on the front side, with two loops on the reverse.

Fig. 4. (K. 11003: 627.) Larson I. Reported to be from the Ordos desert.

Small disc with large central bulb, in the interior of which there is a bar for attachment.

Fig. 5. (K. 11211: 90.) Larson III. Reported to be from the Ordos desert.

Broadly pear-shaped disc, nearly flat. On the reverse a strong vertical loop.

Fig. 6. (K. 11057: 57.) Larson coll. Said to have been found in the Ordos desert.

The back of a very large buckle, the front of which is concave with a central protruding bulb. On the back above the bulb a single strong loop.

Fig. 7. (K. 11055: 41.) Karlbeck 28/29: 461. Bought in Peiping.

Broad annular disc of the same shape as the Chinese *Yüan* jade rings, but with a square loop on the outer circumference. At the outer and inner circumference there are flat borders, 5 mm. broad. The interspace between these two borders is filled in with a pattern of six strongly stylized heads and between them raised dots. Both sides of the disc have the same pattern.

Outer circumference 94 mm. Inner circumference 40 mm.

Fig. 8. (K. 11003: 452.) Larson I. Reported to be from the Ordos desert.

Annular disc of *Yüan* shape. Undecorated, but with two large rectangular holes. Outer circumference 103 mm. Inner circumference 44 mm.

PLATE XVI.

All figures  $\frac{1}{2}$  natural size.

Fig. 1. (K. 11036: 275.) Larson II. Said to have been bought in the Ordos desert.

Thin annular disc decorated on one side with a feather-like pattern. Rich incrustation. Outer diam. 69 mm. Inner diam. 43 mm.

Fig. 2. (K. 11276: 32.) Karlbeck 30/31: 606. Bought in Peiping.

Circular disc with an openwork border. The central disc is entirely undecorated. The border has a frieze of animals, most probably horses or some other quadruped.

In the centre of the reverse there is a loop.

Total diam. 84 mm. Diam. of the central disc 62 mm.

Fig. 3. (K. 11281: 1.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Bronze disc, probably a mirror. Front smooth, reverse with a system of concentric and radiating lines and a central loop. Diam. 69 mm.

Fig. 4. (K. 11282: 30.) Bought in the Ordos desert 1930, between Shenmu and Tokoto.

Ring of openwork design. Innermost a regular ring carrying the supports of an outer "knotty" ring, the "knots" possibly being the degenerations of some kind of animal-heads.

Fig. 5. (K. 11003: 461.) Larson I. Reported to be from the Ordos desert.

Circular disc with raised borders and in the interspace three boomerang-like figures (comp. XI: 11). Outer diam. 46 mm. Inner diam. 25 mm.

Fig. 6. (K. 11247: 42.) Larson VII. Said to have been obtained in the Ordos desert.

Annular disc with narrow margins and in the broad interspace a strong pattern of four waves, reminiscent of the pattern in XI: 3.

Fig. 7. (K. 11057: 68.) Larson coll. Reported to be from the Ordos desert.

Disc slightly concave on the front side. Upon the reverse a four-legged square loop. Diam. 52 mm.

Fig. 8. (K. 11057: 54.) Larson coll. Reported to be from the Ordos desert.

Sexagonal, slightly lobed disc with a high central bulb, in the centre of which there is a large hole. No loop on the reverse. Diam. 94 mm.

Fig. 9. (K. 11003: 1161.) Larson I. Reported to have been found in the Ordos desert.

A bulbous object flattened in the centre, and on the side four holes. It is one of a group of objects described by O. Janse in his paper "Tubes cruciformes" etc. in this volume.

Fig. 10. (K. 10701: 2.) Said to have come from Suiyuan 1926.

Small disc, slightly convex on the front and with two very large loops on the reverse.

Fig. 11. (K. 11211: 70.) Larson III. Reported to be from the Ordos desert.

Semi-globular object with two large rectangular holes 4 mm. above the base of the object and facing one another.

Fig. 12. (K. 11211: 98.) Larson III. Reported to be from the Ordos desert.

Small disc, slightly convex on the frontside and with a large loop on the reverse.

Fig. 13. (K. 11003: 619.) Larson I. Reported to be from the Ordos desert.

Button, low conical, crenelated near the edge. On the reverse a very strong loop.

Fig. 14. (K. 11003: 1156.) Larson I. Reported to be from the Ordos desert.

"Cruciform" bulbous object reminiscent of figs. 9 and 11.

Fig. 15. (K. 11211: 141.) Larson III. Reported to be from the Ordos desert.

Conical smooth button with loop on the reverse. Beautiful green smooth patina.

Fig. 16. (K. 10686: 13.) Bought in Suiyuan, 1926.

Convex disc or large button. Decorated on the front with two zones of "feather"-pattern, separated by an undecorated zone. On the reverse a loop.

Fig. 17. (K. 11003: 727.) Larson I. Reported to be from Ordos.

Three interlaced rings decorated with three groups, each consisting of three slightly oblique crosslines. Between these groups of lines there are three smooth fields.

Fig. 18. (K. 11057: 69.) Larson coll. Reported to be from Ordos.

Disc or large button, decorated with a circular row of dots at the margin and another circle of dots at the centre. In the smooth field between these circles of dots there are four radiating lines forming a cross. In each of these lines four irregularly square dots. On the reverse a loop, which is not quite in the centre.

#### SPOONS, PENDANTS AND TUBES.

##### PLATE XVII.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 11281: 41.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Spoon decorated with a horse's head at the top of the handle. On the upper side of the handle there are two loops, and in the lower of these a short pendant. The hollow part of the spoon is 50 mm. long and 27 mm. broad and strongly curved. Total length of the spoon 106 mm.

There is in our collection a second spoon of nearly the same shape, but with the under side of the handle decorated with transverse lines. In this case there is no pendant preserved. Furthermore we have a large and heavy spoon, 174 mm. long, the hollow part no less than 87 mm. long, with two loops, each carrying a pendant. These spoons with pendants are by no means without parallels. In Nordiska Muséet, Stockholm, there are Swedish silver spoons which are richly adorned with pendants.

There is another spoon, the largest of all, 186 mm. long, with an animal's head at the top of the handle and with five loops on the handle, four lateral and one dorsal. Three of the lateral loops still carry pendants.

Fig. 2. (K. 11212: 2.) Johansson coll. From South Mongolia.

Spoon with a transverse hole at the top of the handle, probably for inserting a string. Handle consisting of two parallel bars with an interspace between. The hollow part nearly circular in shape. Total length 136 mm.

Fig. 3. (K. 11090: 61.) Karlbeck 28/29: 597. Bought in Paoto.

Spoon with a transverse hole at the top of the handle. The handle is a single bar with two pairs of transverse projections, which are widened at their ends.

The hollow part nearly circular, 59 mm. long and 54 mm. wide and rather shallow.

This instrument seems to consist of copper, which however is so decomposed that very little remains of the metal, all the rest having turned into oxide with coatings of malachite and azurite. Total length of the spoon 136 mm.

Fig. 4. (K. 11003: 699.) Larson coll. Reported to be from Ordos.

Lancet-shaped object. At the top of the handle a transverse loop like those of figs. 2 and 3. The handle has a median "nerve" and a wavy border. At the end of this handle is a short lancet-shaped blade. Total length of the lancet 114 mm.

I have placed this instrument among the spoons, as there are in our possession four other spoons, two large and two small, with the same characteristic wavy handles like this lancet.

Fig. 5. (K. 11246: 2.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Small spoon with a loop at the top. The short and broad handle carries four bird's-heads, the curved beaks of which project as sharp hooks. The hollow part is long and narrow. Total length of spoon 71 mm.

Fig. 6. (K. 11246: 3.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Small spoon with handle in the shape of a horse, upon the nose of which there is a small loop for attachment.

Fig. 7. (K. 11036: 272.) Larson coll. Reported to be from Ordos.

Pendant with a strong loop at the top and four horses in two pairs facing each other.

Fig. 8. (K. 11264: 7.) Probably from Northern Shansi.

Small spoon with handle in the shape of an animal with head bent backwards and at the top of the handle a large loop for attachment. This small object has a beautiful black, smooth surface.

Fig. 9. (K. 11247: 44.) Larson coll. Reported to be from Ordos.

Small pendant in the shape of an ibex with legs folded under the body.

Fig. 10. (K. 11250: 19.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Small spoon with narrow-holed loop and handle in the shape of a stylized tiger.

Fig. 11. (K. 11250: 14.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Spoon with very long handle. At the top of the handle a transverse loop and in the middle of the handle a globular projection. Total length of spoon 104 mm.

Fig. 12. (K. 11052: 4.) Shansi. Chieh-hsin-hsien.

Tube of rectangular cross-section and with two large rectangular openings at the back. The front of the tube is divided into two parts, each containing two pairs of comma-shaped figures. Length of tube 53 mm. Width 11 mm. Thickness 6.5 mm.

Fig. 13. (K. 10692: 14.) Shansi 1926. Yang-kao-hsien. Cheng-hung-kou.

Tube with rectangular cross-section. Both sides decorated with friezes of five doglike animals with circles upon the chest and the loin. Rich green incrustations. Length 102 mm. Width 10 mm. Thickness 7 mm. At both ends there are traces of the string inserted in the tube.

Fig. 14. (K. 11003: 702.) Larson coll. Reported to be from Ordos.

Tube with rectangular cross-section. Both sides covered with transverse zig-zag lines. Length 101 mm. Width 15 mm. Thickness 8 mm.

Fig. 15. (K. 11003: 703.) Larson coll. Reported to be from Ordos.

Tube with rectangular cross-section. Both sides decorated with groups of three slightly oblique cross-lines. Length 92 mm. Width 13 mm. Thickness 8 mm.

#### NAILS, PENDANTS AND VARIA.

#### PLATE XVIII.

All objects  $\frac{2}{3}$  of natural size.

Fig. 1. (K. 11036: 321.) Larson coll. Reported to be from Ordos.

Nail with large hollow head with six narrow irregular openings. The head possibly served as a rattle, but the object indistinctly seen in the interior is fixed and may be merely the continuation of the spike. Surface smooth. Thin green patina. Total length 125 mm.

Fig. 2. (K. 11003: 513.) Larson coll. Reported to be from Ordos.

Four-sided nail, in the upper part rounded and with cork-screw ridges. Head partly broken, hollow, originally with four very large openings. Thick green patina. Total length 135 mm.

Fig. 3. (K. 11036: 324.) Larson coll. Reported to be from Ordos.

Nail, four-sided in the lower part, irregularly rounded in the upper and with a very large triangular head with three large openings. Total length 137 mm.

Fig. 4. (K. 11283: 18.) Karlbeck 30/31: 111. Bought in Mongolia.

Nail, four-sided in the lower part, irregularly rounded in the upper. Small solid head and a loop at the base of the head. Smooth dark-green patina. Total length 145 mm.

Fig. 5. (K. 11211: 38.) Larson coll. Reported to be from Ordos.

Big pendant with a large hole at the top. The main body consists of alternately cylindrical parts with obsolete transverse lines, and interspaces, which are hollow, widened and provided with four narrow openings. There are three such interspaces and possibly a fourth one directly attached to number three and forming the lowest, incomplete part of the whole piece. Smooth dark-green patina. Total length 111 mm.

Fig. 6. (K. 11283: 17.) Karlbeck 30/31. Probably bought in Mongolia.

Four-sided nail with a rounded upper part in three sections. The middle one smooth, the lower one and the one just below the head having transverse lines. Head small and flat. Quite possibly this object is considerably more recent than the other nails here described. Length 105 mm.

Fig. 7. (K. 11090: 58.) Karlbeck 28/29: 667. Bought in Peiping.

A unique object, the lower part of which is nail-shaped with an irregular elongated hole in the upper part.

Upon this lower part rests a guard-shaped cross-plate, upon which stands a "tiger" of the striped type.

From the back of this tiger projects a vertical bar, which is very thin and rather wedge-shaped at the top.

Fig. 8. (K. 11036: 214.) Larson coll. Reported to be from Ordos.

A pendant-shaped object with a button at the top and at the back of this button a vertical loop. The lower, longer part smooth at the top and bottom, but the greater part of its length has a design of roof-like lines.

Fig. 9. (K. 11003: 648.) Larson coll. Reported to be from Ordos.

An object of the kind termed "cicada cash". (See Ramsden: *Chinese Early Barter*, Yokohama 1912, p. 33—34.)

The uppermost part is a smooth button with a vertical loop on the back. The centre is a flat circular disc with an irregular hole surrounded by a circular furrow. The lowest third of the object is bifurcate with two eye-like holes in the upper half. Because of the loop for attachment being in what is here described as the uppermost third, there is no doubt that the object was used as shown in the plate. Nevertheless, I am convinced that the lower third is the head of some

animal with large pointed erect ears and circular eyes. There are in our material other instances of pendants with animals hanging head downwards, as for example XVII: 9.

**Fig. 10.** (K. 11036: 201.) Larson coll. Reported to be from Ordos.

"Cicada cash", with the upper two-thirds in the shape of rounded buttons, the uppermost one with a loop. The lowest third is bifurcate and has transverse furrows on its upper half.

**Fig. 11.** (K. 11057: 83). Larson coll. Reported to be from Ordos.

Pendant-shaped object, the lower part of which is like a small bell, open on both sides. The lowest part of this bell is decorated with incised lines in a design clearly visible in the figure.

The upper half of the object in the shape of two "buttons", the upper one with a vertical loop on the back.

**Fig. 12.** (K. 11250: 153.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Pendant. At the top a spiral-shaped loop. Below this a cylindrical part, 15 mm. in length and with traces of transverse furrows. Below this a section composed of six-sided openwork and in three stories. The lowest third of the object has the shape of a three-sided arrow-point, hollow in the centre.

**Fig. 13.** (K. 11262: 6.) Nyström coll., 1930. Probably Shansi.

Zigzag-shaped pendant with large hole at the top and ropelike transverse furrows on the zigzag part.

**Fig. 14.** (K. 10692: 21.) Shansi, Yang-kao-hsien, Cheng-hung-kou.

Pendant, approximately six-sided in the lower part.

**Fig. 15.** Unknown locality.

Pendant like fig. 14, but larger, and the lower part composed of openwork.

**Fig. 16.** (K. 11036: 251.) Larson coll. Reported to be from Ordos.

Zigzag pendant with beautiful smooth dark-green surface.

**Fig. 17.** (K. 11246: 31.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

An object of duckbill shape. The broader part with a leaf-like design, the narrower part with an animal's face.

The back of the broad part is quite open, that of the narrow part has two broad loops tending to form a tube.

Fig. 18. (K. 11250: 112.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Like fig. 17, but with an animal's head, eyes and nostrils, on the broad part. The back of the narrow part tubular.

VESSELS.

PLATE XIX.

All figures  $\frac{1}{8}$  of natural size.

Fig. 1. (K. 11057: 255.) Larson coll. Reported to be from Ordos.

Bronze cauldron, with lugs in an elaborate pattern as shown by fig. 1 b. Below the collar run two horizontal lines and beneath them again two more, which run down at an acute angle to join the median line, dividing the space between the lugs. These two lines also run down below each of the lugs, but only the upper line forms an acute angle, whereas the lower one runs as two parallel lines down to the bottom of the vessel. Bottom low, narrow, slightly convex, rugged.

Height of vessel (excluding lugs) 172 mm. Diam. of widest part 187 mm.

Fig. 2. (K. 11057: 254.) Larson coll. Reported to be from Ordos.

Nearly cylindrical bronze vessel. Design much like fig. 1, but only two horizontal lines. Lugs as shown in 2 b.

Height excluding lugs 187 mm. Diam. of widest part 156 mm. Diam. of mouth 132 mm. Diam. of bottom 106 mm.

Fig. 3. (K. 11225: 1.) Larson coll. Reported to be from Ordos.

High-footed vessel with two simple horizontal lugs. Body with traces of an almost vertical stringlike pattern, terminating at a horizontal raised line, below which the vessel is smooth.

Casting very irregular. Several repairs, some of them large. Height 161 mm. Mouth oval  $146 \times 130$  mm.

Fig. 4. (K. 4059.) Honan, Ssu-shui-hsien.

High-footed piece with three very large openings in the foot. It is strongly reminiscent of Corean clay vessels of the protohistoric period.

Only one rudimentary lug. Height 126 mm. Widest diam. 84 mm.

Fig. 5. (K. 11003: 1689.) Larson coll. Reported to be from Ordos.

High-footed vessel with lugs and decoration like fig. 2. Four openings in the foot and three raised vertical lines upon each interspace between the openings. Height 156 mm. Widest diam. 116 mm.

## THE HORSE FAMILY.

Of genuine wild horses there are only two species to be considered:

Prschewalski's horse (*Equus caballus przewalskii* Pol.). Now surviving only in Tsungaria, the Russo-Chinese frontier territory Kobdo.

The European wild horse, the tarpan (*Equus caballus gmelini* Ant.). Became extinct in the second half of last century, when it had its last resort on the south Russian steppes of the Dnieper area.

Probably a third species of wild horse is the graceful animal depicted upon the reliefs of ancient Nineveh.

Of wild asses we have the following Asiatic species:

The kiang (*Equus kiang* Moorch.). The wild ass of Tibet, extending its area towards Chinese Turkestan to Yarkand and towards India to Kashmir and the upper course of the Indus.

The kulan (*Equus hemionus* Pall.). This species is widely distributed in Central Asia from the eastern border of Europe through Russian and Chinese Turkestan, Mongolia and southern Siberia. In the mountains of northern Tibet it is found grazing with several species of wild sheep, the Tibetan antelope and the yak, on the steppes it occurs with the Mongolian antelopes and the saiga. It is a migrating mammal; thus, the region of Akmolinsk, for instance, is one of its summer-pastures, whence it moves in winter to the "hunger-steppe" of Bek-pak.

The kulan is a graceful and fleet animal, which, when pursued, playfully gallops away from the hunter. On the steppes there are hardly any carnivores capable of hunting the kulan; the wolves do not dare to attack the asses, which strike powerfully with their hoofs. In southern Siberia the human hunter takes protection behind a light yellow horse when approaching the kulan, and among the Saryk-Turkomans a camel is used for the same purpose.

The meat of the kulan is highly valued as food by the Tunguses, Kirghis and Turkomans. Part of the skin is used for the making of saffian, the rest for the manufacture of leader thongs and horse harness.

The onager (*Equus onager* Pallas), the wild ass, the Greek *onos agrios*. The onager is found in Persia, Mesopotamia, Syria and northern Arabia. This animal is very swift and has excellent hearing and eye-sight. It feeds preferably upon alkaline desert-plants.

The meat of the onager is highly valued even by the Arabs, who would never touch the meat of the donkey. The ancient Romans were very fond of young onagers.

PLATE XX.

All figures natural size.

Fig. 1. (K. 11247: 6.) Larson VII. Reported to be from the Ordos desert.

Horse with the hoofs stylized into the shape of leaves. The basal part of the small plaque formed by the hoofs is continued forwards by a rope-like frame bent at a right angle and extending upwards to the horse's nose. From the nose to the base of the foreleg there is a horizontal bar, probably intended to strengthen the plaque. Between the hind legs a vertical, slightly curved bar which probably represents the animal's tail.

It should be noticed that the mane is dressed in five regular curls, which may indicate that this figure represents a tame horse. In this connection attention is called to the Siberian rock carvings, which show similar curls in the case of the mounted horses. See Appelgren-Kivalo, "Alt-Altaische Kunstdenkmäler". Helsingfors 1931. Abb. 82 and 86.

Fig. 2. (K. 11037: 12.) From C. T. Loo, Paris. Probably bought in Peiping.

A thin lozenge-shaped plaque depicting the body of a wild ass strongly contorted and with the hind part slung over the head. The right foreleg is bent under the head and the left foreleg is resting upon the belly in front of the nose. The left hind leg is shown behind the ear.

This strongly contorted body presents a tempting problem to be explained. It may be simply the copy of a bone-carving in which the shape of the bone has forced the artist to exhibit the animal's body in this contorted position. However, a quite different explanation is possible. Anyone who has seen a game animal, a deer or antelope, slung over the back of a Mongol hunter's horse will certainly agree with me in tentatively explaining this plaque as depicting a hunting trophy, the limp body of a killed kulan carried home by the victorious hunter. On the reverse is a vertical loop. The whole object probably belongs to the same class as XV: 2 and 5.

Fig. 3. (K. 10332.) Bought in Peiping.

Wild ass resting with the legs pulled up under the body. Head bent backwards. The pose is difficult of interpretation. It may be a wounded animal glancing at the pursuer or simply a resting animal startled by some noise. Loin and shoulder with large rings possibly for the insertion of stones. The eye is in the shape of a similar ring.

Fig. 4. (K. 11090: 96.) Karlbeck 610. Bought in Shansi, Fen-yang-fu.

Slender galloping horse. The head is worked in the round with eye and nostril on both sides, but the body is concave on the reverse, with a strong horizontal loop for attachment.

Fig. 5. (K. 11090: 94.) Karlbeck 630. Bought in Shensi, Yülinfu. Said to have come from the Ordos desert.

Stout short-legged horse strongly reminiscent of Prschewalski's horse. The hollow reverse of the plaque carries a loop for attachment. Between the tail and the hind leg there is a short crossbar for the purpose of strengthening the structure.

Fig. 6. (K. 11278: 13.) Karlbeck 31/32: 26. Probably bought in Peiping. Said to have come from Suiyuan.

Cheek-piece of a horse bridle executed in the round and with two strong holes for attachment. The central portion between the holes is slender and cylindrical. The fore-portion of the piece consists of foreleg, neck and head, the hind portion of hind leg and tail.

In spite of the horse's body being strongly attenuated in a way reminiscent of the Luristan bronzes, the naturalistic treatment of the horse's body is very successfully carried out.

Fig. 7. (K. 11091: 10.) Probably from northern Shansi.

Strongly stylized representation of three horses, the two smaller standing on the back of the big one.

A peculiar feature is the characteristic head-dress with a large hole, carried by the two bigger horses.

On the hollow reverse of the plaque there are two vertical loops, the posterior one being completely worn down.

Fig. 8. (K. 10318.) Bought in Peiping 1926—27.

Horse-plaque much resembling fig. 7, but with only one horse on the top of the big one. The head-dress not perforated, fan-shaped. On the hollow back two high vertical loops.

Professor Pelliot has called my attention to the fact that this group of Ordos plaques is very divergent from the rest of the horse representations from this area and that they are strongly reminiscent of bronze plaques of the Caucasus area.

#### DEER AND CAMELS.

The following species should specially be considered:

The elk (*Alces*). In eastern Siberia we find an elk, *A. alces pfizenmayeri* Zukowsky, which is related to the American elk. Only west of Lake Baikal do we find the European elk (*A. alces* L.).

In spite of its size and strength the elk has other enemies than Man, in particular the wolf, the bear, the lynx and the glutton. The wolves are specially

dangerous in deep snow, the bear attacks only isolated animals, the lynx and the glutton wait among the branches of the trees. It is said that when the elks pass, the beasts spring upon them and cut the arteries of the throat.

In addition to the excellent meat (the weight of an elk is 300—400 kg.) the skin is valuable; in olden times it was used for armour.

A former use of the elk, which is little known, is its service as a riding animal. In Sweden, in the time of Charles XI, elk riders were used as couriers and were said to be able to cover 36 Swedish miles (385 km.) in a day.

In Siberia the Yakuts still in the early part of last century used elks for riding purpose, but this custom was discontinued upon the order of the Russian authorities, who found that Yakut bandits mounted upon their elks could easily run away from the pursuing Cossacks on horseback.

The reindeer (*Rangifer*) form a group of closely allied arctic deer, which extends also into the Boreal forests. The woodland reindeer is larger in size than the arctic tundra form and is probably also more primitive. It has been reported, for instance, though hardly proved, that the variety of reindeer that in olden times occurred in the Kasan area of Russia was characterized by the cows having no antlers, just as is the case with the cows of other deer.

The reindeer occurs all over the woodlands of Siberia and in the vast expanses of tundra further north. The name *Rangifer sibiricus* Murray has been given to the reindeer living east of the Lena river. In the Ural mountains the reindeer go as far south as 52° N. Lat. and here they meet the saiga antelope.

The Tunguses and Koryaks use the reindeer for riding, placing a small saddle over the shoulder of the bull. The statement given by Ælianu that the Scyths used to ride upon deer has been suggested to refer to the reindeer.

The sika-deer (*Pseudaxis sika* Temm. Schl. and *Pseudaxis hortulorum* Swinh.), the former living in northern China and Manchuria, the latter in northern Manchuria, are small spotted deer who may have to some extent influenced the Animal Style. (XXI: 4.)

The Wapiti (*Cervus*). Of these and allied deer several species occur in different parts of the area here in question, as for instance the Altai-Wapiti (*Cervus canadensis sibericus*). In the dense forests of Altai, Tien-shan and western Mongolia.

The native peoples as well as the Russian settlers hold large herds of these animals, the antlers of which, when still in velvet, form an important article in the trade with China (used by the Chinese as an aphrodisiacum).

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The camel (*Camelus bactrianus* L.). The domesticated camel is used from Asia Minor and E. Europe to the Pacific, from N. China to S. Siberia. Wild camels occur in the Tarim area and at Lop Nor, from Chami to S. Dsungaria, from Manar and Gutschen to N. W. India. Prschewalski held them to be real wild animals, but Hedin and Littledale are of the opinion that they are descen-

dants of domesticated animals that have turned wild. Leche seems to have reestablished Prschewalski's interpretation.

The camel is a veritable desert animal, which likes the saline water of the desert lakes and feeds preferably upon the alkaline plants of the desert. He is a coward, who in spite of his strength does not think of defending himself against an attacking wolf. Even the ravens dare to tear slices of meat from his back.

E. Hahn's statement that the Huns did not know the camel is of course definitely contradicted by the occurrence of camels in the Animal Style.

PLATE XXI.

All figures natural size.

Fig. 1. (K. 10366.) Bought in Peiping.

A Wapiti-stag with raised head, antler stretched along the back and legs pulled up under the belly. On the back a strong horizontal loop.

Fig. 2. (K. 11283: 50.) Karlbeck 30/31: 50. Bought in Peiping.

Stag in crude execution. Two vertical loops on the back.

Fig. 3. (K. 11211: 230.) Larson III, 1929. Reported to be from Ordos.

Fragmentary Wapiti. Antlers and legs broken.

Fig. 4. (K. 11276: 25.) Karlbeck 30/31: 618. Bought in Peiping.

Sika-deer. Head and body quite naturalistic, but legs stylized to join the lower loop. A second loop on the animal's back.

Fig. 5. (K. 11071: 28.) Karlbeck 28/29: 395. Bought in Peiping.

Elk-cow. Strong horizontal loop on the reverse.

Fig. 6. (K. 11281: 32.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Browsing deer. There may have been an antler, but the apparent fracture is so smoothed by wear that it is difficult to state the meaning of this protuberance in front of the ear.

Beautiful pose and excellent modelling.

Fig. 7. (K. 11152: 7.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

Stag in the same position as fig. 1. Strong loop on the back.

Fig. 8. (K. 11283: 39.) Karlbeck 30/31: 96. Reported to have come from Mongolia.

Buckle, the hind part of which consists of two camels' heads, the muzzles of

which are joined by means of a crossbar for the purpose of attachment to the belt.

The necks of the two cainels pass in sharp curves into the front part of the buckle, an arch-shaped structure in the middle of which is the hook.

Fig. 9. (K. 11246: 19.) Eriksson coll. Region of Hattin Sum. Inner Mongolia. Resting camel, with a loop on its back.

Fig. 10. (K. 11090: 101.) Karlbeck 28/29: 697. Bought in Peiping. Standing camel. A large loop high on the back.

#### SHEEP AND GOATS.

##### PLATE XXII.

All figures natural size.

Fig. 1. (K. 11033: 52.) Karlbeck 28/29: 61. Bought in Peiping.

A sheep with small horns resting with the legs pulled up under the body. Large loop on the back.

Fig. 2. (K. 11090: 129.) Karlbeck 28/29: 625. Bought in Shensi, Yülinfu. Reported to have come from the Ordos desert.

Same species of small-horned sheep as fig. 1. In a pose ready for attack. The connection with the loop consists of rope-like structures, one rope running between the fore- and hind-legs, another from the hind-leg to the loop and a third from the nose touching the fore-leg and continuing to the loop.

Fig. 3. (K. 10289.) Bought in Peiping.

Pole-top in the shape of the head of the same small-horned sheep as figs. 1 and 2. A very large hole through the animal's nose and a loop on the throat.

Fig. 4. (K. 11090: 134.) Karlbeck 28/29: 657. Bought in Fen-yang-fu.

A miniature pendant depicting a young chamois? The surface is of a beautiful jet-black and this little object is altogether very pleasing.

Fig. 5. (K. 11250: 106.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.

The crouching figure of an indeterminate species. A very large, strong vertical loop on the back.

Fig. 6. (K. 11071: 21.) Karlbeck 28/29: 466. Bought in Peiping.

A resting ibex (*Capra siberica*). A pleasing little bronze, beautifully modelled.

**Fig. 7.** Unknown loc.

Browsing ibex.

**Fig. 8. (K. 11248: 48.)** Karlbeck 30/31: 194. Bought in Peiping.

Standing ibex. Forepart of body adorned with spirals and cross-lines, vertical loop on the reverse.

**Fig. 9. (K. 11281: 38.)**

Resting ibex. Large horizontal loop on the reverse.

**Fig. 10. (K. 11248: 54.)** Karlbeck 30/31: 233. Bought in Peiping.

Resting ibex. The object seems to have been used in some way as a buckle, as there is a strong and much worn hook upon the animal's neck.

**Fig. 11. (K. 10362.)** Shansi 1926. Ping-yao-hsien. Nan-shou-tsun.

Ibex? vertical loop on the reverse.

#### ARGALI SHEEP.

The argali or big-horn sheep, as foreign hunters prefer to call them, form a group of Central Asiatic Ovidae comprising the species *Ovis ammon* L., *O. ammon poli* Blyth, *O. comosa* Hollister etc.

These species are closely allied, and it is hardly possible to distinguish in our bronzes which of them was the model in each case. *Ovis commosa*, today inhabiting the hill ranges to the north of the Yellow River bend and the Ordos, seems to be the one species that formed the game of the Ordos hunters. The record ram's head that has been reproduced for comparison by the kind permission of the winner of the trophy, Dr. Roy Chapman Andrews, leader of the Asiatic Expeditions of the American Museum of Natural History, was shot in the Suiyuan mountains.

"The argali spends the night on the highest slopes, but descends in daytime to graze in the valleys and on the plateaux. From time to time an animal climbs a hill-top and stands there spying.

The tame sheep of Central Asia, extending from the S. E. boundary of Europe to China, is supposed to be a descendant of the argali sheep. The Kirghis have herds of 15,000—20,000 animals." (Brehm.)

#### PLATE XXIII.

The bronzes shown in figs. 1—3 natural size.

**Fig. 1. (K. 11282: 1.)** Karlbeck 30/31: 658. Bought in Ordos between Shenmu and Tokoto.

Argali ram standing in a reconnoitring attitude. Beautiful green surface with abundant sandy incrustation.

Fig. 2. (K. 11276: 16.) Karlbeck 30/31: 662. Probably bought in Peiping.

Argali ram (or possibly ibex). The head seen *en face* with the horns projected sideways. The contorted legs form the lower part of the plaque.

Fig. 3. (K. 11038: 2.) One of a pair of plaques bought from Vannieck in Paris 1929.

Within a simple narrow frame is a singular composition of animals. In the lower left-hand corner is the big head of a carnivorous beast with the nose downwards. The ear of this head is taken advantage of to form a functional hole for the plaque.

On a level with this carnivore's head, but more to the right, are two argali sheep in what I should like to call the trophy pose: the body of the animal is slung over its head in a way somewhat reminiscent of a killed animal slung over the back of the hunter's horse. In detail the position of the two sheep is slightly varied: the one next to the beast's head has its hind legs stretched out horizontally above the head so that the hoofs touch the ear of the beast. The left foreleg is folded under the head but the right foreleg is raised in an acute kneeling position along the animal's throat, and resting upon a platform, the meaning of which I am unable to interpret (the paws of the carnivore?).

The second sheep, the one occupying the lower right-hand corner of the plaque, has its hind legs slung down in front of the face. The left foreleg is folded under the head just as in the case of the first sheep, but of the right foreleg nothing is visible.

Above this basal band consisting of one beast and two argali there is a narrow frieze of ten small antelope heads, the foremost one (to the left) bent down differently from the others.

Above this frieze of antelope heads, and framing the uppermost part of the plaque, is another frieze of nine still smaller, rather obscure heads of an equine type.

The design upon the other of this pair of plaques is the same as here described except that there is no hole. These singular and very beautiful plaques seem to represent a kind of perspective: a front row indicated by the large size and consisting of one beast and two argali, a second row of antelopes and a third more distant row of horses.

On the reverse of these two plaques there are two vertical loops for attachment. The surface of the back shows a cloth impression.

Fig. 4. Record ram's head collected by Dr. Roy Chapman Andrews in the Suiyuan mountains. The photograph, which was published for the first time

in Dr. Andrews' book "Across Mongolian plains", facing p. 224, has been kindly offered by him for reproduction here for the purpose of comparison with the argali produced by the artists of the ancient Hiung-nu.

#### CATTLE.

Among our material there can easily be distinguished two widely divergent types of cattle. One with short stout horns and broad head is represented in Plate XXIV: 1—3 and 5. The other, with long slender horns, thin face and large ears is well shown in figs. 7—9. It is possible that these three bronzes represent a later type, more recent than the true Ordos bronzes.

#### PLATE XXIV.

All figures natural size.

**Fig. 1. (K. 11091: 17.)** Bought by Chuang 1929, probably in Shansi.

An unusually heavy piece with a horizontal narrow loop low down on the back. Green surface with abundant incrustation of fine sand.

**Fig. 2. (K. 11152: 13.)** Eriksson coll. 1930. Region of Hattin Sum. Inner Mongolia.

Small buckle, the central decoration of which is a bull's head of the broad-faced type. For decorative effect the horns are shown hollow, like the ears and two large "leaf-shaped" figures on the sides of the bull's head.

**Fig. 3. (K. 11248: 45.)** Karlbeck 30/31: 185. Bought in Peiping.

Bull's head, specially noteworthy for the transverse objects at the base of the horns which may possibly indicate some kind of harness. Between these transverse raised bands and the ears there are two minute holes, apparently for nailing the piece to some substratum.

Beautiful smooth, shiny black surface.

**Fig. 4. (K. 11090: 87.)** Karlbeck 28/29: 647. Bought in Shensi.

Head of a calf with protruding tongue. The piece is hollow and there are also ears and eyes on the reverse, but neither nose nor tongue. Smooth, shiny black surface.

**Fig. 5. (K. 11033: 1.)** Karlbeck 28/29: 39. Bought in Peiping.

Small plaque with rectangular frame of two rope-like lines. In this frame stands a stout bull (yak?) with a long beard?

On the reverse two heavy rectangular loops.

Fig. 6. (K. 11250: 89.) Eriksson coll. 1930. Region of Hattin Sum. Inner Mongolia.

Bovine head with a striated superstructure. Transverse loop on the reverse.

Fig. 7. (K. 11224: 35.) Larson coll. 1930. Probably from Ordos.

Head of the slender bovine type. The eyes are used as holes for the purpose of attachment.

Fig. 8. (K. 11033: 50.) Karlbeck 28/29: 6. Region of Hattin Sum. Inner Mongolia.

Head of the same type as fig. 7 but more strongly modelled with concentric furrows round the eye and six strongly marked ridges between the bases of the horns: ears hollow. Holes for fastening high above the eyes.

Fig. 9. (K. 10344: 1.) Bought in Peiping.

Head of exactly the same type as fig. 7, but attenuated, rather like a caricature.

#### CARNIVORES, PIGS AND S-SHAPED DOUBLE ANIMALS.

##### PLATE XXV.

Fig. 1. (K. 11224: 104.) Larson coll. 1930. Probably from Ordos.

"Tiger". A striped beast with enormous jaws. This is a typical member of a family of bronzes characterized by the stripes and the heavy build and queer shape of the jaws. Other representatives of this group are: IX: 3, X: 16 and XXV: 1.

Fig. 2. (K. 11090: 105.) Karlbeck 28/29: 590. Bought in Paoto, Suiyuan.

Bear's head. Strong horizontal loop on the back.

Fig. 3. (K. 11033: 55.) Karlbeck 28/29: 66. Bought in Peiping.

Bear. On the back two vertical loops, but in addition two holes between the legs, which seem to have served the purpose of attachment.

Fig. 4. (K. 11278: 30.) Karlbeck 31/32: 67. Bought in Peiping.

Pendant. Nearest below the hole for suspension a narrow cylindrical part with transverse ridges, three pairs of narrow ones and two broad ones intercalated between these pairs. In the lower half of the piece two pigs worked in the round with both sides alike. The body is striped, the tails turned upwards along the body.

**Fig. 5. (K. 10282.) Bought in Peiping.**

Pendant in the shape of a boar worked in the round with strongly delineated tusks and mane. The loop for attachment fixed to this mane. The whole piece is hollow and open below as if some other object was to be squeezed into it from beneath. Pleasant smooth green surface.

**Fig. 6. (K. 11090: 98.) Karlbeck 28/29: 649. Bought in Fen-yang-fu, Shansi.**

Boar with powerful mane and heavy tail curled upwards. On the reverse a long loop occupying nearly the whole length of the animal. Thick green incrustations.

**Fig. 7. (K. 10314.) Bought in Peiping.**

S-shaped piece. Each end with the forepart (head and forelegs) of a tiger. At the back a small horizontal loop at each end.

**Fig. 8. (K. 10339.) Bought in Peiping.**

A piece much of the same type as fig. 7 but more complicated. Each tiger holds in its mouth the head of a wild horse or kindred animal. Between the two tigers there is inserted transversely a boar forming the middle part of the object.

**Fig. 9. (K. 10325.) Bought in Peiping.**

Object much like figs. 7 and 8 but still more complicated. Of the S-shape nothing is left except that the two animals are turned different ways. But they are independent and complete with tail and hind legs as well. In the mouth they hold the head of a wild ass. Each end is thickened with a narrow slit for attachment.

**Fig. 10. (K. 11072: 15.) Karlbeck 28/29: 520. Bought in Peiping.**

A broader type of the S-shaped object with two animals in alternating positions. In this case the animals are curled with serpent-like body and a beaked bird's head with a volute behind the eye and a large cock's comb at the top of the head. The centre of the piece is a small button with two perforated lateral parts.

**Fig. 11. (K. 11003: 546.) Larson I. Reported to be from Ordos.**

A piece, in its outline strongly suggesting fig. 10 but with a purely geometrical design of wavy lines and spirals. There is in our possession a large material proving beyond doubt that this type is derived from the type shown in fig. 10 by means of the gradual degeneration of an originally zoomorphic design.

SUNDRY ANIMALS.

PLATE XXVI.

All objects natural size.

Fig. 1. (K. 11247: 67.) Larson coll. Reported to be from Ordos.

Owl.

At the back, in the interior of the head, a horizontal bar for attachment.

Fig. 2. (K. 11037: 6.) Bought from C. T. Loo, Paris.

The head of an *Eophona*, according to Professor Lönnberg. May have served to crown some kind of a small pole. On the side is a hole for inserting a transverse nail to secure it to the pole.

Fig. 3. (K. 11090: 103.) Karlbeck 28/29: 677. Bought in Peiping.

Miniature hare. Pleasant smooth green surface. At the back a large loop for attachment.

Fig. 4. (K. 11037: 13.) Bought from C. T. Loo, Paris.

Buckle, adorned with a crouching big-eared rat. Inside the nose a loop for attachment.

Fig. 5. (K. 11037: 3.) Bought from C. T. Loo, Paris.

Pole-top crowned with a hedgehog. Legs, nose and eyes very clearly discernible. On the back of the socket a large opening for a nail.

STRONGLY STYLIZED ANIMAL REPRESENTATIONS.

PLATE XXVII.

All figures natural size.

Fig. 1. (K. 10103.) San-hai-miao. Inner Mongolia.

A specimen of "l'animal enroulé".

Within a narrow, cordlike frame a single curled-up animal. Head of equine type. Body shapeless with concentric circles instead of the limbs. Strong loop at the back.

Fig. 2. (K. 11003: 497.) Larson coll. Reported to be from Ordos.

A specimen having the same decorative effect as "l'animal enroulé", but consisting of a central strong button with heavy loop at the back. Round the button there is a frame of long-beaked bird-heads (compare fig. 7 of the same plate).

Beautiful black smooth surface.

**Fig. 3. (K. 10328.) Bought in Peiping.**

Another case of "l'animal enroulé". Two cat-like heads joined to a common shapeless body, the whole within a frame of long-beaked bird's heads like fig. 2. Loop at the back. Beautiful smooth greenish-black surface.

**Fig. 4. (K. 11262: 1.) Nyström coll. Probably Shansi.**

Together with figs. 5—8 this piece belongs to a group of objects which for decorative purpose have been worked into a beaked shape. See Borovka: Scythian Art. Plate 8 and 24.

This specimen is so strongly stylized that its zoomorphic origin is entirely lost, but most probably it is derived from some type like figs. 5—6. Narrow high loop at the back.

**Fig. 5. (K. 11091: 22.) Chuang 1929. Probably Shansi.**

Piece of the same family as fig. 4. but more is left of the zoomorphic type, probably a bird's-head with curved beak and ear. Large vertical loop at the back. Pleasant smooth, dark green surface.

**Fig. 6. (K. 11276: 40.) Karlbeck 30/31: 635—650. Bought in Peiping.**

Piece closely related to fig. 5, but more elongated. Very heavy vertical loop at the back. Surface beautiful dark green.

**Fig. 7. (K. 11276: 22.) Karlbeck 30/31: 630. Bought in Peiping.**

Same type as fig. 6 but the bird's beak very long, curved only at the end.

**Fig. 8. (K. 11276: 54.) Karlbeck 30/31: 635—650. Bought in Peiping.**

Object functionally of the same family as figs. 4—7, but of an entirely different zoomorphic origin: an ibex with the horn, mammal head and ear still clearly discernible.

**Fig. 9. (K. 11276: 13.) Karlbeck 30/31: 557. Bought in Peiping.**

Rectangular plaque depicting two birds with intertwined necks. In each corner a hole for attachment.

**Fig. 10. (K. 11276: 14.) Karlbeck 30/31: 575. Bought in Peiping.**

Annular-shaped object with two pairs of (bird's?) heads. Back undecorated. Surface smooth, blackish.

## THE STEPPE NOMADS AS HUNTERS.

In the long preceding chapter we have given a survey, illustrated with Plates I—XXVII, of the Ordos bronzes, the arms, the tools and the personal adornments of the ancient Hiung-nu. Our description is far from complete. Much additional material is still in our hands, and whole groups, such as the arrow-heads, the celts etc., are reserved for future publication.

Nevertheless, we have here for the first time a sufficient array of the metal belongings of the nomads living in the centuries before and during the Han dynasty along the desert course of the Yellow River, to make comparisons with the belongings of the inhabitants of other regions of the vast Eurasian steppe-desert girdle.

Our material is in some ways quite deficient. It is not the outcome of systematic excavations, but has been collected in Suiyuan and Inner Mongolia from local dealers or resident Mongols and a great deal of it bought in the antique shops of Peiping and Shanghai.

Such a material leaves many fundamental questions without an answer. Thus, we are ignorant in most instances whether the objects came from old battle fields, from dwelling sites or from graves — the latter being certainly the most probable. Furthermore, we can only make a guess as to how the different elements were combined in the dress of the warrior or upon the harness of his horse. Finally, and most unfortunately, we have brought together in our twenty-seven plates objects which are not all of one period. There are very archaic objects such as V: 4 and XVII: 3, on the other hand there are late objects such as XVIII: 6 and XXIV: 7—9. It may however be assumed with a considerable degree of probability that the vast majority of the objects depicted in our plates date from the Han period and from the centuries just preceding that era.

Numerous fundamental problems, concerning chronology, the development of different types of arms and ornaments, the beginning, rise and decline of this grand art etc., are to be left for future research.

For the present we will confine ourselves to an examination of only one of the riddles arising out of the study of this simple and at the same time puzzling art: the spiritual meaning of the Animal Style.

For this purpose it is desirable to collect the scanty data on the mode of life of the steppe nomads, specially their activities as hunters. The literary sources are not very illuminating, and it has not been found advisable to limit the collecting of data to a certain area or a certain time. The notes on the mode of life of the Scythians on the Euxine Sea have been blended with the narrative of the Chinese chroniclers on the life of the Hiung-nu. Further, we have published some data concerning the Tu-küe, the ancient Turks, whose empire existed in the 6—7th centuries A. D. But we have gone still further towards quite modern times in quoting from the narratives of Rubruquis and Marco Polo certain

data on the hunting practices of the Mongols at the height of their power in the thirteenth century.

Such a method of gathering evidence from various parts of a vast region and from a long succession of centuries is no doubt fraught with danger, as it may bring together facts that have no real interrelationship. But in this case I feel that the Eurasian steppe-desert area has formed such a continuous geographical unit during the last two milleniums that our method of bringing these data together may well serve as a preliminary orientation.

Minns in his masterly treatise "Scythians and Greeks" (Cambridge 1913, p. 48—49, gives from Herodotus and various other sources the following outline of the life of the Scythians:

"Their chief occupation was looking after their many horses, and of this we have a splendid illustration on the famous Chertomlyk vase, on which we see portrayed in greatest detail the process of catching the wild horse of the steppes or breaking him in. Others have been reminded by it of the story in Aristotle of the Scythian king's practice of horse-breeding. On the vase we have two breeds represented; the tame horse, which is being hobbled and the wild ones with hog manes. Professor Anuchin thinks the former is like the Kalmuck breed and the latter the half-wild horses of the royal stud. Professor Ridgeway compares with the former the shaggy horses of the ancient Sigynnae and those of the modern Kirgiz, descendants of the "Mongolian" pony. The indocility of this race made the practice of gelding necessary, otherwise it was unknown in the ancient world. Horses were also used for food. Scythians were supposed to like them very high. Next in importance to their horses came the cattle used for drawing their great waggons. Both Hippocrates and Herodotus say that they were hornless. The latter ascribes this to the cold. They had sheep as well, for mutton bones are found in cauldrons in the tombs, as for example at Kul Oba. They made no use of pigs either in sacrifice or in any other way. So the early Turks regarded swine as tabu.

Besides looking after their cattle the Scyths of course engaged in hunting, and we have gold plaques with representations of a Scyth throwing a dart at a hare, reminding us of the story of how the Scyths when drawn up in battle array over against Darius set off after a hare. As hunters they had a taste for representations of animals, especially in combat, and these are very characteristic of objects made for their use. Representations such as those on the Xenophantus vase are purely fantastic: more realistic is a hunting scene that appears on the wonderful fragments of ivory with Greek drawing found at Kul Oba.

Hunting supplied some of their food, more was produced by their cattle especially by their horses. Most characteristic were the products of mare's milk, especially kumys, cheese, butter and buttermilk, also horse-flesh and other meat. Their methods of cooking were conditioned by the scarcity of fuel. Very characteristic are the round-footed cauldrons in which have been found horse and

mutton bones. They also used some vegetable food such as onions, garlic, and beans as well as grain, and the people about the Maeotis dug up a sweet bulb just as the Siberian tribes do with the Martagon lily."

For our purpose the note on the breaking in of the wild horse of the steppes is specially attractive since it would show that as late as in the first millenium B. C. the nomads drew extensively from the stock of wild horses (the tarpan?) to increase their herds. Still, this conclusion may be somewhat far-fetched, as it seems possible that the breaking-in scene of the Chertomlyk vase may mean merely the breaking-in of the young animals of the herd accompanied by the hobbling of their manes.

The remark that pigs were tabu and in no way used is in strange contrast to the occurrence of boar heads among the bronze horse-trappings found in the Euxine area (See Borovka: Scythian Art, Plate 17, C—E). From Siberia we have the famous gold plaque portraying a wild boar hunt (Rostovtzeff: Le Centre de l'Asie, la Russie, la Chine et le style animal, Plate X). From the Ordos region we have numerous representations of the pig, some of them quite likely depicting the tame animal.

The notes on the Hiung-nu in the ancient Chinese texts have been compiled by De Groot in "*Die Hunnen der vorchristlichen Zeit*", Berlin and Leipzig 1921, and we quote from pp. 2—3 of this work the following passages:

"Ihr Viehbestand setzt sich grösstenteils aus Pferden, Rindern und Schafen zusammen. Seltener Haustiere sind 狩馳 t'ok-t'o, 'Sack-kamele', Esel und Maul-esel, 駄駒 k'ut-t'i, 駒駒 to-tu und 駒駒 t'o-hi.

Wasser und Pflanzen suchend, wandern sie hin und her. Sie haben keine ummauerten Städte oder festen Wohnorte, noch treiben sie Ackerbau, aber dennoch besitzt jeder einen Teil des Bodens.

Eine Schrift besitzen sie nicht. Vereinbarungen werden mündlich gemacht.

Die Kinder können Hammel oder Schafe reiten, spannen Bogen und schiessen Vögel, Wiesel und Ratten; grösser geworden schiessen sie Füchse und Hasen, die zur Ernährung dienen.

Die Kraft der Krieger liegt in ihrer Gewandtheit im Spannen der Bogen. Sie sind alle gepanzerte Reiter. Und was die Sitten und Bräuche anbetrifft, so wandert man in ruhigen Zeiten mit dem Vieh herum, erschießt dabei Vögel und Vierfüssler und findet so den Lebensunterhalt. Sobald Gefahren drohen, üben sich die Männer für den Krieg. Mit stürmender Hand Einfälle machen und angreifen, das liegt in ihrer Natur. Ihre langen Waffen sind Bogen und Pfeile, ihre kurzen Waffen Schwerter und Speere. Wo sie im Vorteil sind, da stossen sie vor; sind sie aber im Nachteil, dann ziehen sie sich zurück und scheuen sich sogar nicht vor einem fluchtartigen Rückzug, und zwar dorthin, wo sich eine günstige Stellung einnehmen lässt.

Von 禮 li, 'vorschriftmässigen Lebensregeln', und 義 i, 'Lebenspflichten', wissen sie nichts. Sowohl Fürsten und Prinzen als Untertanen essen das Fleisch

der Haustiere und kleiden sich mit den Häuten, über die sie sich noch eine Pelzjacke (旃裘) anziehen. Die jungen Männer essen die fetten und guten Speisen, während die alten nur die Überreste bekommen; somit werden die jungen und kräftigen wertgeschätzt, die alten und schwachen dagegen für minderwertig erachtet. Wenn ein Vater stirbt, dann heiraten seine Söhne ihre Mutter, welche er nach ihrer eigenen Mutter geheiratet hatte. Stirbt ein Bruder, dann nehmen seine Brüder dessen Frauen in Besitz und heiraten sie."

The first mention of the herd animals of the Hiung-nu is interesting, specially with reference to the animals named.

On this passage De Groot makes the following comment:

"Aus der Zusammensetzung der sechs letzten Schriftzeichen ist ersichtlich, dass hier von drei pferd- oder eselartigen Tieren die Rede ist. Diese näher zu deuten, ist unmöglich, weil hier Kommentare und Glossare versagen. Das Šuo' wěn kiai tsě, "Erklärung der Schriftzeichen zur Erläuterung der Literatur", ein Wörterbuch, das um das Jahr 100 unserer Zeitrechnung entstand, schreibt, dass ein k'ut-t'i ein Maultier sei, dessen Vater ein Pferd ist, und dass ein t'o-hi ein wildes Pferd sei. Die drei Benennungen sind höchstwahrscheinlich nicht chinesisch."

Specially noteworthy is the statement that t'o-hi was a wild horse. If this is true, it follows that the Hiung-nu drew upon the wild horses to increase their herd, much in the same way as the drawings of the Chertomlyk vase may indicate that this was the case with the Scythians.

In his extracts from Pien-i-tien, published in *Journal Asiatique* under the title "*Documents historiques sur les tou-kioue (Turcs)*", Ser. 6, tome 3, 1864, Stanislas Julien makes the following statement, pp. 331—333:

"Les Tou-kioue laissent flotter leurs cheveux, jettent à gauche le pan de leur vêtement, et habitent sous des tentes de feutre. Ils se transportent d'un lieu à un autre, suivant qu'ils y trouvent de l'eau et des herbes. Leur principale occupation est l'élève des troupeaux et la chasse. Ils font peu de cas des vieillards, et montrent une grande estime pour les hommes qui sont dans la force de l'âge. Ils ont peu d'intégrité et de honte du mal, et ne connaissent ni les rites ni la justice; ils ressemblent en cela aux anciens Hiong-nou. Quand leur chef vient d'être nommé, ses satellites et ses grands officiers le transportent dans une litière de feutre, et, en un jour, ils lui font faire neuf promenades circulaires. Chaque fois, tous ses sujets le saluent. Quand les salutations sont finies, ils le prennent sous le bras et le font monter à cheval. Alors, ils lui serrent le cou avec une bande de soie, sans aller jusqu'à l'étrangler; ensuite ils desserrent le lien de soie et l'interrogent vivement en ces termes: "Pendant combien d'années pouvez-vous être notre khan?" Le roi, dont les esprits sont tout troublés, ne pouvant préciser le nombre demandé, ses sujets jugent, par les paroles qui lui sont échappées, de la longueur ou de la brièveté de son règne. Ses grands officiers sont: 1° le Che-hou; 2° le Mo; 3° le Te-le; 4° le Sse-li-fa; 5° le Thou-tchun-fa et d'autres petits magistrats. Ces fonctionnaires publics forment en tout vingt-huit classes distinctes. Toutes ces

charges sont héréditaires. Pour armes, ils ont l'arc, la flèche, la flèche sifflante, la cuirasse, la lance, le sabre et l'épée. Leurs ceintures ont des ornements en creux et en relief.

Au sommet de la hampe de leurs drapeaux, ils placent une tête de louve en or. Les satellites du roi s'appellent fou-li, mot qui, en chinois, signifie lang (loup). Comme ils sont issus d'une louve, ils ne veulent pas oublier leur ancienne origine.

Quand les Tou-kioue lèvent des soldats ou des chevaux, quand ils exigent, à titre d'impôt, différentes espèces d'animaux domestiques (ou de bétail), ils font des entailles sur une tringle de bois pour les compter; puis, pour inspirer la confiance, ils y appliquent un cachet de cire avec un fer de lance.

Voici leurs lois pénales: Ils punissent de mort ceux qui se sont révoltés, qui ont commis un homicide ou fait violence à une femme mariée. Celui qui a déshonoré une jeune fille est puni d'une forte amende, et est obligé de l'épouser tout de suite. Celui qui a blessé un homme dans une rixe doit lui payer une amende proportionnée au mal qu'il lui a fait. Celui qui a volé un cheval ou différents objets doit en donner dix fois la valeur. Quand un homme est mort, on dépose son corps dans sa tente. Ses fils, ses neveux, ses parents des deux sexes, tuent chacun un mouton et un cheval, et les étendent devant la tente comme pour les leur offrir en sacrifice. Ils en font sept fois le tour à cheval, et dès qu'ils sont arrivés devant la porte de la tente, ils se tailladent le visage avec un couteau, de sorte qu'on voit le sang couler avec leurs larmes. Après avoir fait sept tours, ils s'arrêtent. Ils choisissent alors un jour favorable, et brûlent le cheval que montait le défunt ainsi que tous les objets qui étaient à son usage. On en recueille les cendres, et on enterre le mort à des époques particulières. Lorsqu'un homme est décédé au printemps ou en été, on attend pour l'enterrer que les feuilles des arbres aient jauni et soient tombées. S'il est décédé en automne ou en hiver, on attend que les feuilles soient poussées et que les plantes soient en fleur. Alors on creuse une fosse et on l'enterre. Le jour des funérailles, les parents et les proches offrent un sacrifice, courrent à cheval et se tailladent la figure comme le premier jour où la personne est morte. Après l'enterrement, auprès de la sépulture, on place des pierres et l'on dresse un écritau. Le nombre des pierres est proportionné à celui des ennemis que le défunt a tués pendant sa vie. De plus, ils offrent en sacrifice une tête de mouton et une tête de cheval, et les suspendent au-dessus de l'écriteau. Ce jour-là, les hommes et les femmes se revêtent tous d'habits riches et élégants, et se réunissent auprès du tombeau. Si un homme devient amoureux d'une fille, il s'en retourne et envoie aussitôt quelqu'un pour la demander en mariage à ses parents, qui, d'ordinaire, ne refusent point leur consentement. Après la mort d'un père ou d'un oncle, le fils, le frère cadet et les neveux épousent leurs veuves et leurs soeurs. Mais les femmes d'un rang honorable ne peuvent avoir commerce avec des hommes d'une basse condition. Quoique les Tou-kioue émigrent ou changent de domicile, chacun d'eux a toujours une portion de terre. Le khan habite constamment sur le mont Tou-kin-chan. Sa tente

s'ouvre du côté de l'orient, par respect pour le côté du ciel où se lève le soleil. Chaque année, on conduit les nobles au caveau de leurs ancêtres pour y sacrifier. De plus, dans la deuxième décade du cinquième mois, on rassemble d'autres hommes pour qu'ils aillent adorer l'esprit du ciel sur la même montagne et lui offrir un sacrifice. A quatre cents li de là, il y a une montagne extrêmement élevée, où n'existent ni plantes ni arbres. On l'appelle P'o-teng-i-li, expression qui signifie en chinois l'esprit du ciel. Les caractères de leur écriture ressemblent à ceux des barbares; ils n'ont point de calendrier, et comptent les années d'après le nombre de fois que les plantes ont verdi."

In the narrative of his remarkable journey to the Mongol Court of Karakorum in the years 1253—55 William of Rubruck gives the following data from the life of the Mongols:<sup>1)</sup>

"They catch also rats, of which many kinds abound here. Rats with long tails they eat not, but give them to their birds. They eat mice and all kinds of rats which have short tails. There are also many marmots, which are called sogur, and which congregate in one hole in winter, and sleep for six months; these they catch in great numbers. There are also conies, with a long tail like a cat's, and on the end of the tail they have black and white hairs. They have also many other kinds of small animals good to eat, which they know very well how to distinguish. I saw no deer there. I saw few hares, many gazelles. Wild asses I saw in great numbers, and these are like mules. I saw also another kind of animal which is called arcali, which has quite the body of a sheep, and horns bent like a ram's, but of such size that I could hardly lift the two horns with one hand, and they make of these horns big cups. They have hawks and peregrine falcons in great numbers, which they all carry on their right hand. And they always put a little thong around the hawk's neck, which hangs down to the middle of its breast, by which, when they cast it at its prey, they pull down with the left hand the head and breast of the hawk, so that it be not struck by the wind and carried upward. So it is that they procure a large part of their food by the chase."

"From Ruscia, Moxel, and from greater Bulgaria and Pascatir, which is greater Hungary, and Kerkis, all of which are countries to the north and full of forests, and which obey them, are brought to them costly furs of many kinds, which I never saw in our parts, and which they wear in winter. And they always make in winter at least two fur gowns, one with the fur against the body, the other with the fur outside exposed to the wind and snow; these latter are usually of the skins of wolves or foxes or papions, and while they sit in the dwelling they have another lighter one. The poor make their outside (gowns) of dog and kid (skins).

When they want to chase wild animals, they gather together in a great multi-

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<sup>1)</sup> Rockhill: The journey of William of Rubruck to the Eastern parts of the world, 1253—55, London, 1900, p. 68—71.

tude and surround the district in which they know the game to be, and gradually they come closer to each other till they have shut up the game in among them as in an enclosure, and then they shoot them with their arrows."

The notes which we have collected in this chapter on the life of the Scythians, the Hiung-nu, their descendants, the Tu-kiie and the Mongols of the thirteenth century give us the picture of cattle-breeding steppe dwellers who were at the same time great hunters for the purpose of increasing their stock, collecting furs for clothing and, above all, as the main source of their food supply.

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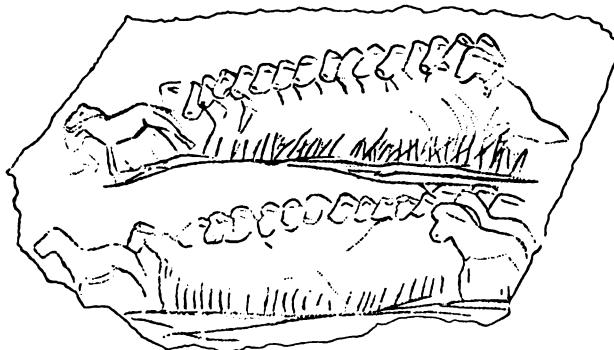


Fig. 2. Palaeolithic Animal Style. Two friezes of horses.  
Engraving upon a piece of stone. Grotte du Chaffaud,  
Vienne. After E. Cartailhac.

### THE PALAEOLITHIC PARALLEL.

One day in the summer of 1920, when riding across the grasslands of Inner Mongolia, I made an observation which greatly appealed to me.

It was a hot summer day with only a faint breeze, and the flies were a scourge to my ponies. I suddenly saw upon a low rocky ridge a small troop of horses, apparently belonging to some local Mongol. They were standing upon the very crest of the hill in single file, head following head and with the tails waving constantly to keep away the insect pests. All the animals were more or less protected thanks to the unbroken line of moving heads and tails.

It at once struck me that here I had a living counterpart to the friezes of horses and reindeer which are found engraved in bone and slate among the remains of Magdalenian Man in the caves of France. These engravings, which show the herds with only the first and the last animal fully drawn and the rest merely indicated by means of heads and antlers, much as I saw the horses at Erteme in Mongolia, are not simply a mechanical repetition of individuals but rather life-like scenes actually visualized by the Palaeolithic artist.

This strong impression of the immediate and unmistakable reproduction of life in the Magdalenian art struck me again with new and overwhelming force in the summer of 1923 when I travelled with my caravan along the northern shore of Kokonor in N. E. Tibet. During the heavy summer rains the pastures abounded in grass and flowers. Numerous herds of antelopes and above all the wild ass, the Kiang (*Equus kiang*), were grazing all round our track, and at one moment I counted no less than about four hundred kiangs within sight. They were more curious than shy, and specially during their mating the couples came heedlessly running so close up to the caravan that our own animals got scared.

This was verily a Palaeolithic scene, and I delighted in seeing this abundant animal life of much the same kind as that which formed the object of the chase as well as the art of the Magdalenian hunters.

Another outcome of my travels in Mongolia was that I learnt to know some few pieces of the art of another great race of hunters, the Huns, the Hiung-nu of the Han dynasty chroniclers. As my researches into this splendid animal-style bronze art progressed, I was led to compare it with the Palaeolithic animal style, and it occurred to me that some characteristics of the Magdalenian art are specially noticeable in these comparisons.

The most striking feature in the wall paintings and engravings of the late Palaeolithic cave-dwellers is their strict and in many cases masterly naturalism. There are all grades of quality in these productions. Some are hastily and artlessly drawn, with little attention to anatomy and proportion, in many ways reminding us of children's drawings, others are mediocre, a kind of commercial ware exhibiting skill and observation, but little artistic spirit; then again there is an élite consisting of masterpieces of the great Magdalenian artists. The browsing reindeer from Thaingen in Switzerland, the running wild boar at Altamira, the mammoth engraved on a blade of ivory from La Madeleine — the type locality of this great artistic epoch —, the gallery of bison, mammoth, reindeer, horse and wolf at Font-de Gaume in Dordogne, and the charming picture from human life, a mother with her child, from Minateda, in the province of Albacete in Spain, all represent the best of Palaeolithic art and all have in common the intimate study and the faultless conception of life-like scenes. The Magdalenian art in its prime exhibits very little that is conventional and stylized. As soon as the latter process sets in in earnest, we have reason to believe that we are near the final stage, the degeneration and decline of the grand art.

A further feature of Palaeolithic art that is of great importance to our study is those ancient artists' choice of models. They depicted almost exclusively the edible big game, the pachyderms and the hooved animals, mammoth, more rarely rhinoceros, but most abundantly reindeer and horse. The carnivores are quite rare, as are also birds and fishes. The scarcity of human representations in the Palaeolithic art of France has caused considerable comment and it has been supposed that Man was tabooed from this art. In the cave paintings of Spain the situation is different, human figures occur quite frequently, sometimes massed in fights, hunting episodes and ritualistic scenes. The rarity of human figures in the French cave finds may be due simply to the fact that the ancient artists concentrated upon their main object, game, leaving the hunter to be indirectly manifested by the arrows and wounds which are sometimes visible upon the flanks of the game animals.

Closely related to the fact just described, that the Magdalenian artists reproduced principally the useful big game, are two other features of this art. When the animals are not depicted as isolated individuals or in family scenes, to which

we will presently turn our attention, hunting scenes are most frequent, and the animals represented are with rare exceptions only those that lived in the immediate surroundings of the hunter-artists. It is eminently the art of a hunting people.

A striking feature is the quite frequent occurrence of scenes from the family life of the game animals, episodes invariably connected with their mating or otherwise the propagation of the game stock. The male is often shown following or sniffing the female as a prelude to pairing. To this group belongs the beautiful "Combat of Reindeer", engraved upon a schist plaque from Laugerie-Basse, as well as the two bison sculptured in clay at Tuc d'Audoubert.

Under this heading we have also to remember the objects that are known under the name of *bâtons de commandement*, stick-like pieces of reindeer antler, upon which are engraved a reindeer cow followed by one or several bulls. It is true that the use and meaning of these instruments is still a matter of divergent opinion, but whatever it was it seems likely that it served a magic concerned with the maintainance of the stock of that game animal, the reindeer, which above all others made possible the existence of the Magdalenian people.

There is still a group of representations in the art of the cave artists which may deserve to be mentioned side by side with the propagation scenes just described. I refer in this case to the figures of ithyphallic masked men and of women in an advanced state of pregnancy (compare the famous "Femme au renne", engraved upon a reindeer antler from Laugerie-Basse, the masked ithyphallic man engraved upon bone from Mas-d'Azil and the very similar figures, partly ithyphallic, with animal heads or masks and with arms raised in a gesture possibly of worship, which are reproduced by Cartailhac and Breuil *La Caverne d'Altamira*, pp. 56—58).

Anyone who has studied the mind of primitive races knows well how, by force of sympathetic magic according to the formula *similia similibus*, objects of the animal or vegetable kingdoms have been called upon to help in securing the fecundity of the human stock, and vice versa the woman, the ithyphallic man or scenes of mating have been represented to promote those processes, hunting or agriculture, upon which the peoples are dependent for their sustenance. Thus, for instance, the cowrie shell (*Cyprea moneta*), because of its similarity to the woman's vulva, has been most extensively used as a charm to produce fecundity and easy delivery. On the other hand, ritualistic embracings in the fields in spring-time have formed part of the agricultural fecundity rites, and, according to Mannhardt, in Germany in ancient times a woman ritualistically embracing the trees of the orchard or a pregnant woman working in the garden were means to aid the reaping of a rich harvest.

It is tempting to interpret the frequent representations of ithyphallic men, pregnant women and mating scenes depicted by the artists among hunting races

and herdsmen as representations supposed to help in maintaining the wild game or the tame domestic stock.

Closely related to these propagation scenes are the masked figures. We have already seen that the ithyphallic men — if they are really human — wear animal masks. A very famous figure of this kind is "the dancing sorcerer" engraved and painted upon the wall of the cave of Trois Frères. In this case the picture is so distinct and rich in detail that there exists no doubt that here is a man performing a rite in an animal mask crowned with deer antlers.

The features of the Magdalenian art here described can hardly be reconciled with the idea that this Palaeolithic animal style developed purely as an art for art's sake. Another interpretation of its spiritual meaning and practical purpose was given in 1903 by Salomon Reinach, first in an article in *Chronique des arts*, then in the same year in *L'Anthropologie*, pp. 257—266, and some years later (1908) in a paper *L'art et la magie* included in a collection of essays on *Cultes, mythes et religions*, pp. 125—136.

Reinach was induced to develop his theory by the study of Spencer and Gillen's classical work on the totemic customs of the native tribes of Central Australia. Among these savages the *emu* clan, for instance, performs certain rites intended to favour the reproduction of the totem animal, and the essential feature in this rite is the painting of images, not only of the totem animal itself but of its eggs as well.

From these ethnological parallels Reinach concluded that the Palaeolithic animal paintings, sculptures and carvings were produced according to the rules of sympathetic magic, which works under the assumption that the picturing of an animal confers to the maker of the image a power to attract the animal in question and to kill or catch it. This interpretation of the Magdalenian art as inspired by the ideas of hunting magic seems to be the only solution of the problem capable of conforming to all the peculiarities of the said art, as outlined above.

The fact that the Magdalenian art depicts almost exclusively the edible big game, but very rarely the carnivores, and furthermore the scarcity of human representations, the abundance of episodes of the hunt, the recurrence of mating scenes and of masked figures, with partly human, partly animal features, all conforms entirely to the idea of hunting magic as the force underlying all this artistic activity.

It has been stated above how ethnological parallels have contributed fundamentally to elucidating this difficult problem. A very full and profusely illustrated review of such ethnological facts as were known up to 1906 has been given by Cartailhac and Breuil in their monograph *La Caverne d'Altamira*, pp. 145—225.

Without in any way pretending to review the vast amount of fresh material accumulated since the year just mentioned, I wish to cite a very fascinating

note given by Leo Frobenius in his work *Das unbekante Afrika* (1923), p. 34—35:<sup>1)</sup>

"Im Jahre 1905 traf ich in dem Urwaldgebiet zwischen Kassai und Luebo auf Vertreter jener vom Plateau in die Zufluchtsorte des Kongo-Urwaldes verdrängten Jägerstämme, die als Pygmäen so berühmt geworden sind. Einige der Leute, drei Männer und eine Frau, geleiteten die Expedition etwa eine Woche lang. Eines Tages — es war gegen Abend und wir hatten uns schon ausgezeichnet miteinander angefreundet — war einmal wieder grosse Not in der Küche, und ich bat die drei Männlein, uns noch heute eine Antilope zu erlegen, was ihnen ja als Jäger ein Leichtes sei. Die Leute sahen mich ob dieser Ansprache offenbar erstaunt an, und einer platzte dann mit der Antwort heraus, ja, das wollten sie schon sehr gerne tun, aber für heute sei es natürlich ganz unmöglich, da keine Vorbereitungen getroffen seien. Das Ende der sehr langen Verhandlung war, dass die Jäger sich bereit erklärten, am anderen Morgen mit Sonnenaufgang ihre Vorbereitungen zu treffen. Damit trennten wir uns. Die drei Männer gingen dann prüfend umher und zu einem hohen Platze auf einem benachbarten Hügel.

Da ich sehr gespannt war, worin die Vorbereitungen dieser Männer denn nun bestehen würden, stand ich noch vor Sonnenaufgang auf und schlich mich in das Gebüsch, nahe dem freien Platze, den die Leutchen gestern abend für ihre Massnahmen ausgewählt hatten. Noch im Grauen kamen die Männer, aber nicht allein, sondern mit der Frau. Die Männer kauerten sich auf den Boden, rupften einen kleinen Platz frei und strichen ihn glatt. Dann kauerte der eine Mann nieder und zeichnete mit dem Finger etwas in den Sand. Währenddessen murmelten die Männer und die Frau irgendwelche Formeln und Gebete. Danach abwartendes Schweigen. Die Sonne erhob sich am Horizont. Einer der Männer, mit dem Pfeil auf dem gespannten Bogen, trat neben die entblößte Bodenstelle. Noch einige Minuten und die Strahlen der Sonne fielen auf die Zeichnung am Boden. Im selben Augenblick spielte sich blitzschnell folgendes ab: die Frau hob die Hände wie greifend zur Sonne und rief laut einige mir unverständliche Laute; der Mann schoss den Pfeil ab; die Frau rief noch mehr; dann sprangen die Männer mit ihren Waffen in den Busch. Die Frau blieb noch einige Minuten stehen und ging dann in das Lager. Als die Frau fortgegangen war, trat ich aus dem Busch und sah nun, dass auf dem geebneten Boden das etwa vier Spannen lange Bild einer Antilope gezeichnet war, in deren Hals nun der abgeschossene Pfeil steckte. — — —

Am Nachmittage kamen die Jäger mit einem hübschen Buschbocke uns nach. Er war durch einen Pfeil in die Halsader erlegt".

From my own home province of Nerke in central Sweden, there is a statement published by H. Hofberg in his *Nerikes gamla minnen*, 1868, which reveals very clearly some of the features of hunting magic.

In the forests of E. Nerke, but more particularly in the Ysätter swamp in the

<sup>1)</sup> My friend Dr. Hanna Rydh has kindly called my attention to this very illustrative episod.

Asker district there lived in ancient times a wood spirit named Ysäters-Kajsa. She was usually seen by the hunters as a young girl, beautifully dressed and with hair of exceptional length.

Ysäters-Kajsa gave her special favour to a great hunter named Bottorpa-Lasse. He was a miraculous marksman: as soon as he imitated the note of the bird be desired, or drew upon the wall of his cottage the image of the animal he wanted to kill, at the moment he fired his gun, an animal of the intended species fell dead to the ground before him.

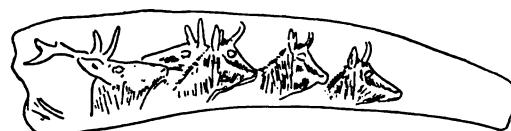


Fig. 3. Palaeolithic Animal Style. Frieze of deer and chamois. Engraving upon reindeer antler. Gourdan. After S. Reinach.

## NATURALISM VERSUS STYLIZATION.

In the Palaeolithic Animal Style naturalism reigned supreme. Its strength was drawn from the intimate study of the wild life abounding in the homeland of those primitive hunters, and its charm lies above all in the unfailing comprehension with which the game animals are depicted in mural paintings as well as in engravings upon the household objects.

Stylization was very little in evidence when this art was at the height of its power. It set in only towards the end of the life-time of the old Animal Style, and then it acted as a swift and deadly deteriorating agency.

In the Animal Style created by the Eurasian steppe nomads of the late Bronze Age the process of stylization, in conjunction with borrowing from abroad of partly very old and complex elements, acted as a progressive agency creating bold and forceful masterpieces. It is quite natural that the learned scholars who have made us familiar with the animal style were attracted first of all by these "court style" treasures buried in the tombs of the great chieftains.

Not only have we illustrated and described in this paper for the first time simple household objects of the ancient Hiung-nu, but we have also been able to reproduce many other objects decorated in a strictly naturalistic style, derived from a constant and intimate study of the wild animal life surrounding the hunter-artists. It thus becomes evident that the Animal Style developed out of an interaction between a local naturalistic art on the one hand, and on the other loans from distant lands and times long past, combined with the bold stylization of the naturalistic beginnings far beyond the realms of reality.

It is apparent that the naturalistic treatment is most readily applied in the picturing of single animals taken directly from the life models.

Take, for instance, the horse illustrated in Plate XX. Fig. 5 of this plate is a very good representation of the Prschewalski horse, clumsy and primitive but highly suggestive. Similarly figs. 1 and 3 of the same plate are very true pictures of the tame horse and the kulan respectively. But even in a case like the cheek-piece fig. 6, in which the horse-body is attenuated to the extreme, the naturalistic treatment is nevertheless maintained in a remarkable way.

While we are examining this one plate, let us pause for a moment at fig. 2. The strongly contorted body of the kulan seems to be merely the whim of a fanciful draughtsman. And yet, this first impression may be due simply to our ignorance of the aims of the artist. If I am right in my interpretation of this picture as a case of the "pose of the trophy", where the original was the dead kulan slung over the back of the hunter's pony, then we here meet another masterpiece of naturalistic simplification of a rapidly enacted scene once visualized.

Let us now turn our attention to Plates XXI—XXIII, deer, camels, goats and

sheep. The elk cow in fig. 5 of Plate XXI is very suggestive, but nothing is more charming as a picture from life than the browsing deer in fig. 6. The camels in figs. 9 and 10 seem at first sight very strangely contorted, but any one familiar with the poses and movements of those queer animals will readily realize how cleverly the Hiung-nu artist has caught intimate glimpses of them. Again, the buckle in fig. 8 gives a most characteristic pose of the camel, which could easily be corroborated by photographs in my possession.

The resting ibex XXII: 6 and the browsing animal of the same kind XXII: 7 are portrayed directly from life.

The pendant with a small-horned sheep in Plate XXII: 2 belongs to the same group as the argali in XXIII: 1 and the kulan in XXX: 2, animals standing upon a hill-top scanning the country below, as is recorded by experienced observers in the case of both the argali and the kulan.

XXIII: 2, an argali or ibex head en face resting upon the huddled body, seems a strange case. But to me its is simply another variant of the trophy pose, the dead body limp on the ground and the beautiful head lifted by the triumphant hunter to be seen and admired. The student who asks for modern corroboration should consult Andrews: "*Across Mongolian plains*", plate facing p. 185 and the same author: "*One the trail of ancient Man*", plate facing p. 27.

Wonderful examples of immediate life imitation abound in Plate XXVI. Look at the charming little hare, the rather awkward hedgehog and the crouching rat, which no one could draw without a most intimate study of rodent life upon the grasslands.

But it was not only in depicting isolated animals that the Hiung-nu artist worked in a manner true to nature. Nowhere did he reach a higher standard in this line than in the small and apparently insignificant family scenes such as the pairing deer in XXVII: 2 and the goat with sucking kid in XXVIII: 6.

In a special chapter "The plaque of combat" I have related at length how I tried, at first in vain, to find an explanation of the scenes of struggle that form such a powerful component in the nomad art, and I have also told of how I found the key to this riddle in one of Rosa Bonheur's paintings and in the pictures and verbal narratives of travellers in the Siberian wilderness, like Brehm and Atkinson. I feel convinced that if we were in a position to enlist the co-operation of such a present day expert on the wild life and the hunting practices of Mongolia as Dr. Roy Chapman Andrews, possibly aided by the trappers of the Siberian Taiga, then many more of the obscure riddles of the Animal Style would find a ready interpretation.

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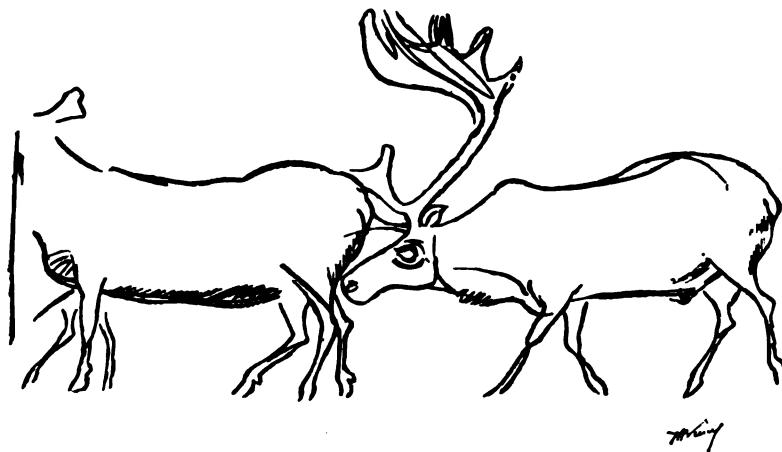


Fig. 4. Palaeolithic Animal Style. Courtship of reindeer. Engraving upon schist. Laugerie-Basse. After H. Breuil.

#### FAMILY SCENES.

Among the Ordos bronzes there is one group that seems to be specially characteristic of this area and full of deep significance. At any rate, I cannot recollect that mating scenes or other episodes taken from the animals' family life of such strength and outspokenness as those depicted in our Plate XXVIII have been found in ancient Scythia or in Siberia. And, if the interpretation of these bronzes — some of them rare specimens of art —, which I present below, is correct, then they form beyond doubt one of the strongest arguments in favour of the whole interpretation of the Animal Style here given.

#### PLATE XXVIII.

All figures natural size.

Fig. 1. (K. 11004: 25.) A piece without parallel in the whole nomad art and an object of singular grace and beauty. At the same time it is an interesting story how this specimen became part of the material housed in the Museum of Far Eastern Antiquities.

On the 12th November 1926, when H. R. H. the Crown Prince of Sweden, en route from Peking to Shanghai, visited the famous Chinese collector and antiquarian Lo Chen-yü in Tientsin, that learned collector had arranged in his home a temporary exhibition of some specially noteworthy things, and among these was the object here in question. When I asked our host the age of the

specimen, he gave me the somewhat startling reply: Sung. The specimen, puzzling in its entirely non-Chinese style, was difficult to place even for this scholar, who was so well versed in all the intricacies of Chinese antiques, and so he put it tentatively in the Sung dynasty — a thousand years later than its real age — apparently because that time so abounded in queer innovations in art. I told Mr. Lo what my belief was concerning the specimen and explained that it was especially important for the research-work in which I was interested. He therefore kindly consented to let us buy it from him.

It is a slightly S-shaped bronze-rod, 200 mm. long and nearly circular in cross-section. Upon the upper half of the rod stand five deer, foremost a hind followed by four stags. In front the rod is bent so as to touch the chest of the hind. The part of the rod upon which the deer stand is flat, rough, and dentated where it passes over into the rounded smooth rod. Similarly dentated is also a narrow stringlike branch of the rod which rises to touch the back of the last stag. The head of the hind is turned so that its nose touches the muzzle of the foremost stag.

There is an interesting likeness between this object and one of the most fascinating and at the same time most disputed types of the Magdalenian objects, the "bâton de commandement". The technique of the casting has offered a new way of applying the symbolic animals; they are no longer engraved on the surface of the rod but form an independent frieze of animals, touching the rod only with their feet. But except for this technical development the two objects are strikingly alike: a rod-shaped object, either the branch of a reindeer antler or a similar object in bronze, and in both cases a row of deer, foremost a hind followed by several stags in a pose of courtship.

The use and meaning of this piece is just as unknown as that of the Palaeolithic "bâton de commandement". It looks as if the smooth part of the rod was to be grasped in the hand, the instrument being held horizontally and the significant procession of animals thus being shown to the onlookers. It could very well form part of a magic rite, but this is of course merely a conjecture.

Fig. 2. (K. 10365.) Bought in Peiping.

A small object of, at first glance, irregular outline, depicting a pairing scene. It is a masterpiece of naturalistic art. The force of the movement is remarkable: the masculine strength with which the stag seizes the groin of the hind with his forelegs and the gentle grace with which she turns her head to touch his nose.

At the back a horizontal loop for attachment.

Fig. 3. (K. 11247: 39.) Larson coll. Reported from Ordos.

A piece consisting of two stags opposing each other in such a way as to form a specimen of "l'animal enroulé" (compare Plate XXVII: 1—3). It may be that this design has nothing to do with mating scenes, all the more as on one side a beaked bird's head is inserted between the two deer. Strong loop at the back.

Fig. 4. (K. 11071: 33.) Karlbeck 28/29: 445. Bought in Peiping.

The pairing of stag and hind. This representation is far more sophisticated than fig. 2 and lacks its strength and natural grace.

The two animals carry a kind of girdle, consisting of four raised lines on the stag and three on the hind. Surface beautifully smooth, green. Loop at the back.

Fig. 5. (K. 11248: 56.) Karlbeck 30/31: 235. Bought in Peiping.

Two stags. A heavy piece, in which the eye-holes may have served for attachment.

Fig. 6. (K. 11261: 1.) Nyström collection 1930. Probably from N. Shansi.

Goat with sucking kid. In spite of the crude execution a beautiful and imaginative piece.

Fig. 7. (K. 11037: 5.) Bought from C. T. Loo, Paris.

Pairing of two feline animals, according to Professor Lönnberg possibly Lynxes.

Two small loops at the back.

Fig. 8. (K. 11033: 48.) Karlbeck 28/29: 63. Bought in Peiping.

A piece consisting of three rings upon which stands a feline animal holding in its mouth the head of a wild ass. Upon the back of the mother animal crawl two cubs.

Yellow brasslike metal.



Fig. 5. Palaeolithic Animal Style. Frieze of reindeer. Bone engraving. Grotte de la Mairie, Teyjat (Dordogne). After Capitan and Breuil.

### MULTIPLICATION OF INDIVIDUALS.

#### PLATE XXIX.

All figures  $\frac{2}{3}$  of natural size.

Fig. 1. Most of the specimens Larson coll. Probably from Ordos.

Among the Ordos bronzes one of the most common types is the foxhead in its manifold varieties.

1 a. depicts three fox-heads, which are still quite naturalistic, except that the left one has a band of three raised lines over the nose. At the back of each head a vertical loop.

1 b. is an equally naturalistic fox-head photographed between two bronze buttons.

In 1 c. the fox-head and the lateral buttons are united into one piece with a very long horizontal loop covering the whole back of the specimen.

1 d. A piece much resembling 1 c., except that the fox-head has degenerated into a narrow body, pointed upwards as well as downwards.

1 e. represents another branch of this series of the geometrical degeneration of the fox-head motif. The lateral buttons are in this case smooth, each with a horizontal loop on the reverse. By aid of comparison with the previous fox-head representations 1 a.—c. we can assume with certainty that the lobed figure between the buttons, with three lobes at the top and two at the bottom, are two fox-heads with the central ear common to both. The geometrization of the originally zoomorphic pattern is already far advanced. A horizontal line divides the smooth nose from the rest of the head, which is decorated with a V-shaped pattern.

1 f.—i. give us a new line of geometrization. Along the fox-heads, which are hardly recognizable any longer, run vertical lines of dots, three lines in all cases except in 1 g., in which there are five.

1 j. gives us still another alternative of geometrization: A zigzag-line following

the contour and forming a volute upon each button. It is only the continuous series described above that can convince us that the zigzag-figure is the deterioration of two combined fox-heads.

1 k.—l. give us a further stage in the process of geometrization. Two pieces of the type 1 j. are here combined into one piece. In 1 k. the two pairs of fox-heads are still easily discernible, but in 1 l. the fox-head motif has passed into a purely geometrical zigzag-design.

Pending the fuller treatment of the geometrization-process in the Animal Style, which we intend to write in a future paper, we have chosen to give here this one example to show the evolutional process from a naturalistic beginning to a final product in which the geometrical design betrays nothing of its zoomorphic origin. The beginning and the end of a similar process is shown in XXV: 10, 11.

**Fig. 2.** Mostly Larson coll. Reported to be from Ordos. The rest from various localities in Shansi.

Bronzes of the type 1 h. occur in our collection in great numbers, and we were anxious to find out their use. One day Mr. Karlbeck pointed out that they were probably attached to the belt or other part of the personal dress as adornments in the manner shown in fig. 2. It at once became evident that Mr. Karlbeck's suggestion had revealed to us the use not only of this type but also of several others, as will be shown in another paper.

On second thoughts, however, it seemed unlikely that these foxhead-bronzes were attached to a horizontal part of the dress like the belt, as then the foxhead-pattern would be lost sight of. On the other hand, it seems quite likely that they were attached to some vertical part of the dress as shown in fig. 2. These considerations have brought me to a new line of thought. It is striking that most of the authors who have written about the Scythians and Hiung-nu, when attempting to interpret the metal objects left by them, have looked upon them merely as a horde of warriors and horses, rather neglecting the fact that their womenfolk certainly took their ample share of the metal adornments. Is it not quite likely that the Hiung-nu women wore ornaments richly laden with metal objects, as do the Mongolwomen of to-day? In these modern times showing a revival of the use of furs we should find it easy to visualize the possibility that the ancient steppe nomads hunted the carnivores principally for replenishing their stock of furs. Just as the ladies of the present day very much favour the fox, as far as the fur-trade is concerned, very likely the women inhabiting the steppes of Asia two thousand years ago did the same.

**Fig. 3. (K. 11264: 2.)** Nyström coll. Probably Shansi.

Three horses, within a simple frame.

Fig. 4. (K. 11090: 88.) Karlbeck 28/29: 626. Bought in Yülinfu, Shensi.  
Two stags within a frame.

Fig. 5. (K. 10283.) Karlbeck 30/31. Bought in Peiping.  
Two pairs of wild asses within a frame. Beautiful smooth green patina.

Fig. 6. (K. 11090: 33.) Karlbeck 28/29: 716. Bought in Peiping.  
Four small-horned sheep, alternately placed within a frame. Beautiful smooth green patina.

Fig. 7. (K. 11247: 2.) Larson coll. Reported to be from Ordos.  
Within a double rope-like frame, three stags strongly stylized, the antlers forming a continuous network above their heads.  
At the base two pairs of holes for attachment.

Fig. 8. (K. 11281: 23.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.  
Two heads of asses combined into one piece. White silvery metal.

Fig. 9. (K. 11281: 40.) Eriksson coll. Region of Hattin Sum. Inner Mongolia.  
Four heads of wild asses. A heavy piece with strong loop at the back. Beautiful, smooth black surface.

Fig. 10. (K. 11282: 13.) Karlbeck 30/31. Bought in the Ordos desert between Shenmu and Tokoto.  
Six pigs in rows of three. A heavy, much-worn piece with horizontal loop at the back.

Fig. 11. Karlbeck 30/31: 66. Belongs to Mr. Ivan Traugott. Bought in Peiping.  
A small-horned sheep with two additional horns shown behind that belonging to the animal. This may be interpreted as indicating three individuals in the same way as the Palaeolithic friezes of horses and reindeer.

Fig. 12. (K. 11259: 3.) Nyström coll. Probably Shansi.  
A singularly crude piece showing a very degenerate animal design consisting of long ears, stylized head and indications of shoulder and loin. In this crude way are indicated 14 animals, all alike, and arranged in two vertical rows of seven in each.  
Two strong buttons at the back.

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A common feature of all the figures reproduced in Plate XXIX, is the monotonous massing of individuals of the same kind. When two fox-heads are combined side by side as in fig. 1 e. — i. it creates a certain artistic effect, which may well account for this arrangement. But when pieces with two fox-heads are massed together as shown in fig. 2, it seems most likely that there was a desire to create an effect of multitude and plenty.

When an animal is repeated twice, or three or four times as in figs. 3—7, there may also be a successful effort to create an artistic effect.

Again, in such exceedingly artless pieces as 8—10 and 12 the intention must have been to create an idea of number, as is also the case with the charming and clever little piece shown in fig. 11, in which the two additional specimens are indicated only by their horns.

A further instance of this tendency to multiplication of individuals may be shown in Plate XXXIV: 2<sup>1</sup>), a rectangular plaque with a simple geometric design within the frame. In this case our interest is centred upon the frame, which is covered all round with what we have called the "leaf-like" pattern. A study of the plaques published by different authors will show that this design was originally quite naturalistic and arrived at from three widely different natural objects, namely the leaves of the trees and the ears and the hoofs of ungulate animals. It is tempting to think that, when a plaque has become so completely geometrized as is the case with XXXIV: 2, the game animals are still indicated by the ears and hoofs inserted in the frame. The fact that parts of animals are used to represent the whole animal is abundantly shown in our material, as, for instance, by the felines, who hold merely the head of a wild ass in their mouth.

<sup>1</sup>) (K. 11281: 27.) Eriksson coll. Region of Hattin Sum.

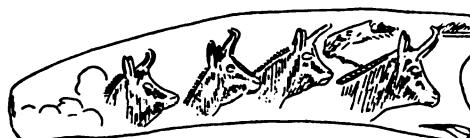


Fig. 6. Palaeolithic Animal Style. Frieze of chamois. Engraving upon reindeer antler. Gourdan. After S. Reinach.

## MASKED ANIMALS.

Plate XXX: 2 depicts a bronze belonging to the Sauphar collection and earlier reproduced by Rostovtzeff in "The Animal Style in S. Russia and China", Plate XXXI: 3. It shows a kulan standing on a hilltop scanning the country all round in the pose described by Radde (p. 298). The bronze may have been used to crown a poletop or adorn a cart or a horse's harness. It is noteworthy that there is a loop on the outside of the socket.

The neck and head are loose, so that the head can be turned round in any direction.

In fig. 1<sup>1</sup>) of the same plate we see in natural size the movable head-part of a kulan bronze like fig. 2. But in this case the equine type has been strangely blended with another element. The neck and the ears are those of a wild ass, but the muzzle of that animal has been replaced by the curved beak of a bird of prey.

A still more curious case of the masking of an animal by making it assume features belonging to quite a different type is met with in fig. 3, representing in natural size a most remarkable specimen, belonging to the George Eumorfopoulos collection and here published by the courtesy of Mr. Eumorfopoulos.

At the first glance the piece seems to represent an argali because of the characteristic, heavy, curved horn. A closer examination, however, of the piece will tell us beyond doubt something quite different, namely that the head, apart from the horn, is that of a wolf or possibly a wolf-dog. In the same way the body is not that of a sheep, but on the contrary is in its outline the body of a dog or wolf. For the purpose of comparison we reproduce in fig. 4 a photograph of a wolf-dog from our zoological garden at Skansen, Stockholm, the picture having been kindly placed at my disposal by Dr. A. Behm, curator of the zoological department of that institution.

Upon examining the specimens here described we shall easily perceive that in them we find, expressed in a new manner, the fundamental idea underlying the whole Animal Style.

All this art, apart from the propagation scenes, is composed of two elements in everlasting deadly conflict: the animal of prey and the game animal. In the plaque of the eagle (XXXII: 1) and the plaque of the tiger this conflict is most vigorously expressed in a struggle between the attacker and the victim. In smaller pieces such as XXV: 8, 9 the same idea is dominant, except that the game is present only with a small but significant part, the head. In a piece presenting the "trophy pose", such as XX: 2, the animal of prey is altogether invisible but the successful hunt is evidenced by the trophy.

In these masked pieces like the kulan with an eagle's beak and the wolf-dog

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<sup>1</sup>) (K. 10292.) Bought in Peiping.

with an argali's horn the two opponents are merged into one complex and contradictory individual.

These two examples of masked animals form a far too scanty material to permit of a full understanding of the significance of masking in the hunting practices of the ancient steppe nomads.

Our knowledge is very incomplete on this point, moreover, because we possess too imperfect an acquaintance with the hunting methods of the steppe people. It happens that I am able to illustrate this from my own very limited hunting experience in Mongolia.

We will learn from the chapter on the plaque of combat how the animals of prey such as the eagle and the tiger were made the servants of Man to assist in the hunting of the big game animals.

On the other hand, strange as it may sound, the whole procedure may be reversed in such way that the horse is regarded as a helper masking the hunter when aiming at the eagle.

When in Inner Mongolia I first tried to obtain specimens of the big birds of prey that sit like sentinels upon all the small rocky crags of the rolling steppe, I dismounted at a distance and tried walking warily to approach the watchful animal, but always in vain; for long before I had come within range, the royal bird was off into the air.

Later I discussed the matter with my Mongol friends, and they told me that I was altogether wrong in my hunting methods. In Mongolia a walking man is an anomaly that will scare the game, whereas the mounted man is an everyday occurrence. I at once put this advice into practice. Together with one of my servants, both of us mounted, I made straight for the eagle, who paid little attention to us. When I was within easy range, I slipped off my horse and aimed at the eagle in the shelter of my companion and the two horses. The little ruse was often successful, with the effect that we brought home a good bag of the Eastern Steppe-Eagle, the Upland Buzzard and the Shangar Falcon.

There was probably a brisk demand among the Hiung-nu for eagles, as the rectrices of these birds were used for feathering their arrows (de Groot, *Die Hunnen*, p. 94).

### THE PLAQUE OF COMBAT.

In the art treasury of the steppe nomads it is undoubtedly the plaques of combat, executed in Scythia and Siberia chiefly in gold, but in the poorer Ordos area in copper, that deserve the place of honour.

In size they are among the foremost of all these metal objects, their motive is at the same time very attractive and highly puzzling, and the execution in many cases strikingly forceful.

They are 12—15 cm. in length, rectangular in shape or rounded rectangular with an arched forepart, higher than the rest. Within a frame, which is often decorated with a leaf-like design, there is a scene depicting what has been called a fight between two animals. It may be two horses fighting as in the case of XXXI: 1, an eagle attacking a quadruped as XXXII: 1, or a carnivore killing a wild horse or an argali XXXIV: 1. Some of the plaques exhibit much more fantastic scenes, griffins and dragon-like fabulous monsters engaged in sanguinary combat.

When I first began to work upon the hunting magic as a mode of interpreting the nomad bronzes, I felt that these plaques formed the stumbling block past which I found it difficult to go. There seemed no way of harmonizing these puzzling and yet masterly pieces of art with the interests of the hunter. It looked for some time as if a fanciful imagination had inspired the artists to compose these fighting scenes merely as art for art's sake. But the very fact that these scenes of combat form such a powerful component of the whole nomad art and that they all have one thing in common, the deadly struggle, seemed to prove that some powerful force must have suggested to the nomad artists this one motive over and over again.

The idea that has at last solved this riddle and ranged the plaques of combat in line with the ideas of hunting magic, occurred to me when I was perusing Brehm's *Tierleben* (Swedish edition 1921), the chapter on horses, and found there in vol. 2 plate facing page 193 the reproduction of Rosa Bonheur's painting *Le duel*, the mating fight between the two stallions, Godolphin Arabian and Hobgoblin. In the distant background the beautiful filly Roxelane, the prize of the fight, stands keen attentive waiting for the outcome of the struggle, and in the foreground tower in magnificent strength the two combatants, one jet black, the other cream white.

It is a mating fight, glorious in its historically documented brilliance and far-reaching in its consequences as introducing the noble Arabian blood into the racing stables of England.

This famous incident has been so graphically depicted by L. Roger-Milès<sup>1</sup>) in his volume on the life and work of Rosa Bonheur, the famous French animal paintress, that I find it suitable to quote here the whole passage:

<sup>1)</sup> L. Roger Milès: *Rosa Bonheur, sa vie — son œuvre*. Paris 1900. P. 132—34.

"Vers 1730, le bey de Tunis, désirant s'attirer les faveurs du roi de France, lui avait fait présent de huit barbes du sang le plus pur, d'une illustre origine. Parmi ces huit barbes se trouvait un jeune étalon d'une grande beauté. Il s'appelait Scham, et portait au cou un sachet en poils de chameau, contenant son histoire et sa glorieuse généalogie. Un Arabe nommé Agba était commis à sa garde.

Les étalons, présentés au roi à Paris, attirèrent peu son attention, et tous furent abandonnés aux mains des palefreniers des écuries royales, qui s'empressèrent de jeter l'amulette aux ordures et d'employer Scham au transport des provisions de bouche entre Paris et Versailles. Agba recueillit l'amulette, mais Scham fut bientôt vendu, moyennant quelques pistoles, à un charretier parisien. Roué de coups, mal nourri, mal soigné, il dépérît rapidement, et un jour qu'il traversait la rue Dauphine, il glissa et s'abattit, exténué. Un quaker anglais en eut pitié, intervint, l'acheta au charretier pour quinze louis et fit conduire Scham à son hôtel. Il apprit d'Agba l'histoire de ce cheval, qui, bien soigné, reprit son lustre primitif. On l'emmena en Angleterre. Comme il était très difficile à monter, le bon quaker céda bientôt son acquisition à Lord Godolphin, fils du ministre de la reine Anne, qui envoya Scham et Agba à son haras de Gog-Magog, dans le comté de Cambridge. Scham fut baptisé Arabian-Godolphin, nom qu'il devait rendre plus tard si célèbre. Quoi qu'il en soit, on le destinait à un emploi fort secondaire, qui était d'exciter à l'occasion les étalons paresseux. La jalouse d'Agba et sa rage n'eurent plus de bornes, quand se produisit l'incident principal de cette histoire.

Parmi les filles du Vent, aucune ne le disputait alors à Roxelane, superbe jument à la robe blanche comme la neige. Elle appartenait à Lord Godolphin, qui faisait courir sur tous les champs de course d'Angleterre. Il était d'une importance suprême de lui trouver un mari digne d'elle.

D'autre part, il n'y avait pas de rival à opposer au fameux étalon Hobgoblin, surnommé, dans les pâturages de Gog-Magog, "l'heureux roi", "l'orgueilleux sultan", car il y régnait en maître au milieu d'un harem des plus belles odalisques à quatre pieds.

Agba était logé avec Scham dans une belle écurie, à côté du palais merveilleux, centre de luxe et de richesses, qu'occupait Hobgoblin.

Agba, qui avait entendu vanter les qualités de Roxelane, ne doutait pas que Scham ne lui fût destiné. Mais quand il apprit que le rôle de Scham serait seulement d'éveiller les appétits d'Hobgoblin, il s'indigna et bientôt oublia l'obéissance qu'il devait à ses maîtres.

Lord Godolphin venait d'arriver avec quelques amis pour assister à l'intéressant événement qui se préparait. Hobgoblin fut mis en présence de Roxelane, qui ne le reçut que froidement. Scham, à quelque distance, hennissait avec fureur. Alors Agba, hors de lui-même, ne pouvant résister davantage à ces appels, ouvrit la grille qui l'enfermait dans un pré, et Scham s'élançant d'un bond sur Hobgoblin, engagea un combat acharné.

Impossible de les séparer. Bientôt Hobgoblin, battu, sanglant, prit la fuite et laissa le champ libre à son adversaire, qui reçut Roxelane pour prix de sa victoire.

Désespoir de Lord Godolphin: Roxelane la proie d'un vil arabe! Mais bientôt Schain montra des qualités jusqu'alors inconnues. A trois ans, le jeune poulain commença sa carrière, qui ne fut qu'une suite de victoires. Il fut logé dans le palais d'Hobgoblin et une célèbre progéniture illustre encore son nom.

Le portrait d'Arabian-Godolphin, fait à cette époque, a été conservé; de même pour celui d'Hobgoblin, et c'est à l'aide de ces documents que Rosa Bonheur, reconstituant une scène d'histoire, nous a donné un nouveau chef-d'œuvre."

Rosa Bonheur's painting as it is reproduced in our Plate XXXI: 2 offers such a striking parallel to the nomad style plaque shown in fig. 1<sup>1</sup>) of the same plate that words are not necessary to complete the comparison. Nearly every feature in the bronze casting of two thousand years ago can readily be retraced in the work of the modern artist-student of animal life.

Little is known about the mode of life of the very rare remnants of the once enormous herds of true wild steppe horses. Concerning a near relative of theirs, however, the strong and fleet kulan (*Equus hemionus*), we can quote from Radde the following passage describing their mating fights (translated from Brehm's *Tierleben*):

"At the end of September the young stallions leave the herd, to which they have belonged for three to four years, and go to the hilly country to form their own herds. During this time they are very turbulent. For hours the young stallion stands upon a high precipice facing the wind and scanning the country below. His nostrils are wide open, his eyes search the valleys. Burning with lust for battle he seeks for an opponent, and as soon as one is found, off he goes in full gallop. Then ensues a sanguinary struggle for the mares."

All the stallions killed by Radde showed numerous wounds and scars from their rutting fights.

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Another type of the plaque of combat shows an eagle (with a griffin's ear) attacking an ungulate, a wild horse or an argali sheep. In a further variant of the type the prey of the eagle is a carnivorous mammal, and in still another the eagle attacks a feline animal or wolf, who in his turn has made an ungulate his prey.

Our Plate XXXII: 1<sup>2</sup>) gives an instance of this type of plaque, the prey of the eagle being in this case an ibex standing behind a small tree with head bent down and the eagle's powerful beak in his neck.

In this case it was from Berger and Grönberg's "Jakten", a review of hunting methods through the ages, that I received the inspiration that led me to what I believe to be an interpretation of this family of plaques. On p. 239 of this

<sup>1</sup>) (K. 11248: 22.) Karlbeck 30/31: 70. Bought in Peiping.

<sup>2</sup>) (K. 11276: 6.) Karlbeck 30/31: 331. Bought in Peiping.

work there is a reproduction of Professor H. Ungewitter's painting of Kirghis hunting wolves with an eagle. The similarity with the plaque is striking, except that the prey in one case is an ibex, in the other a wolf.

Much nearer the motive of our bronze plaque comes a hunting scene depicted by T. W. Atkinson, a British artist who travelled extensively in the borderlands of southern Siberia in the middle of last century and from these journeys published two books "Oriental and Western Siberia", London 1858, and "Travels in the regions of the Upper and lower Amoor", London 1860. In the former of these books he gives on p. 493 the picture of a hunting eagle ("bearcoot") slaying a deer. This figure, which is all the more interesting because it is accompanied by a full description (pp. 492—494) of the hunt, is reproduced as our XXXII: 2. Atkinson's description well deserves to be quoted here:

"A well-mounted Kirghis held the bearcoot chained to a perch, which was secured into a socket on his saddle. The eagle had shackles and a hood, and was perfectly quiet: he was under the charge of two men. Near to the Sultan were his three hunters, or guards, with their rifles, and around us were a band of about twenty Kirghis, in their bright-coloured kalats: more than half the number were armed with battle-axes. Taking us altogether, we were a wild-looking group, whom most people would rather behold at a distance than come in contact with.

We began our march, going nearly due east; the Sultan's three hunters leading the van, followed by His Highness and myself; his two sons and the eagle-bearers immediately behind us, with two of my men in close attendance. A ride of about two hours brought us to the bank of a stagnant river, fringed with reeds and bushes — where the Sultan expected that we should find game. We had not ridden far when we discovered traces of the wild boar — large plots having been recently ploughed up. This gave us hopes of sport. Our rifles were unslung, and we spread out our party to beat the ground.

We had not gone far when several large deer rushed past a jutting point of the reeds, and bounded over the plain, about three hundred yards from us. In an instant the bearcoot was unhooded, and his shackles removed, when he sprung from his perch, and soared up into the air. I watched him ascend as he wheeled round, and was under the impression that he had not seen the animals; but in this I was mistaken. He had now risen to a considerable height, and seemed to poise himself for about a minute. After this, he gave two or three flaps with his wings, and swooped off in a straight line towards his prey. I could not perceive that his wings moved, but he went at a fearful speed. There was a shout, and away went his keepers at full gallop, followed by many others. I gave my horse his head, and a touch of the whip; in a few minutes he carried me to the front, and I was riding neck-and-neck with one of the keepers. When we were about two hundred yards off, the bearcoot struck his prey. The deer gave a bound forward, and fell. The bearcoot had struck one talon into his neck, the

other into his back, and with his beak was tearing out the animal's liver. The Kirghis sprung from his horse, slipped the hood over the eagle's head, and the shackles upon his legs, and removed him from his prey without difficulty. The keeper mounted his horse, his assistant placed the bearcoot on his perch, and he was ready for another flight. No dogs are taken out when hunting with the eagle; they would be destroyed to a certainty; indeed, the Kirghis assert that he will attack and kill the wolf. Foxes are hunted in this way, and many are killed — the wild goat and the lesser kinds of deer are also taken in considerable numbers. We had not gone far before a herd of small antelopes were seen feeding on the plain. Again the bird soared up in circles as before — this time I thought to a greater elevation; and again he made the fatal swoop at his intended victim, and the animal was dead before we reached him. The bearcoot is unerring in his flight — unless the animal can escape into holes in the rocks, as the fox does sometimes, death is his certain doom."

Another observer of highest authority has taken part in and described these eagle hunts of the Kirghis. In his popular lectures on animal life "*Vom Nordpol zum Aequator*", Stuttgart, Berlin, Leipzig 1890, pp. 400—402, A. E. Brehm gives the following description of a hunt with eagles:

"Unter die ritterlichen Uebungen der Kirgisen muss auch die Jagd gezählt werden. Dem aufgespürten Wolfe folgt der kirgisische Jäger mit solchem Eifer und solcher Ausdauer, dass er es wenig achtet, wenn ihn die bei scharfem Reiten doppelt fühlbar werdende Kälte ernstlich gefährdet, d. h. er sich Gesicht und Hände erfriert, und wenn sein Pferd unter ihm nicht versagt, schmettert er zuletzt sicherlich die gewichtige Keule auf das Haupt des Räubers hinab. Noch mehr als solche Hetze liebt er die Jagd mit Adler und Windhund. Wie seine Vorfahren versteht er den Steinadler zu zähmen und abzutragen, zieht, ihn auf der stark beschuheten Hand tragend, und diese auf ein am Sattel befestigtes Holzgestell stützend, zu günstig gelegenen, weite Umschau ermöglichen Höhen empor und lässt durch seine Genossen die vor seinem Auge liegende Steppe absuchen. Die Jagd gilt dem Wolfe wie dem Fuchse, solange der Adler noch nicht hinlänglich geübt, neben dem Murmeltiere nur dem letztgenannten. Einer besonderen Abrichtung des Raubvogels bedarf es nicht; alles, was gelehrt und gelernt werden muss, besteht darin, dass der Adler, welcher in frühester Jugend dem Neste entnommen und von dem Jäger selbst geäst wurde, auf den Ruf zu seinem Herrn zurückkehrt: ererbte Gewohnheit thut das übrige. Sobald die Jagdgenossen einen Fuchs aufgetrieben haben, enthäubt und entfesselt der Jäger den Stossvogel und wirft ihn in die Luft. Der Adler breitet seine Fittiche, beginnt zu kreisen, steigt in Schraubenlinien höher und höher, erblickt den eilend laufenden, weil gehetzten Fuchs, fliegt ihm nach, stürzt sich mit halb eingezogenen Flügeln und weit vorgestreckten Fängen schief auf ihn hernieder und schlägt ihm die Fänge in den Leib; der Fuchs seinerseits dreht wütend den Kopf, um den Feind mit seinem scharfen Gebisse zu packen, und der Adler ist verloren, wenn solches

gelingt. In fast jedem der ebenso starken als kühnen Raubvögel aber lebt das ererbte Gefühl der ihm solcherart drohenden Gefahr und ebenso die Geschicklichkeit, ihr zu begegnen. In demselben Augenblitze, in welchem der Fuchs sich wendet, löst der Adler die Fänge, und einen Augenblick später umklammern sie das Gesicht des Opfers. Jauchzender Zuruf des heransprengenden geliebten Herrn ermuntert zur Standhaftigkeit, und wenige Minuten später liegt der Fuchs, gefällt von dem zur Hilfe gekommenen Jäger, verendend am Boden. Mancher Adler freilich büsst beim ersten Versuche seine Kühnheit mit dem Leben; gelingt ihm aber der erste Angriff, so eignet er sich bald solche Fertigkeit an, dass er auch auf den Wolf geworfen werden kann. Diesem gegenüber benimmt er sich vom Anfange an, wenn auch genau nach denselben Regeln, so doch merklich vorsichtiger; schon die Grösse des Raubwildes lässt ihn erkennen, dass er es mit einem noch ungleich gefährlicheren Gesellen zu thun hat. Doch auch ihn lernt er bewältigen, und ebenso hoch wie der seines Herrn steigt sein eigener Ruhm unter allem Volk, und mit dem Ruhme sein Preis. Ein Adler, welcher den Fuchs schlägt, wird mit dreissig bis vierzig Rubel, einer, welcher den Wolf zu besiegen weiss, mit dem Doppelten und Dreifachen bezahlt, falls er seinem Herrn überhaupt feil ist. Mit zwei Adlern kan man nicht jagen, weil einer den anderen stören würde; ist doch der eine oft so jagdeifrig, dass er dem Jäger die Hilfe in hohem Grade erschwert oder sich, wenn das Raubtier unter ihm erlegen, gutwillig von ihm nicht lösen lassen will."

The picture of the eagle hunt accompanying this description is here reproduced in fig. 7.

I mentioned at the beginning of this chapter that in some of the plaques of combat the fighting scene is very complex and of a puzzling nature: a carnivorous quadruped attacking an ungulate and the carnivore in its turn being attacked by an eagle. We reproduce in our Plate XXXIII: 1 a plaque that was once in the possession of the Chien Pao curio-shop in Peiping, which has kindly presented us with this picture. The primary victim is an ibex resting on the ground with head and horn strongly bent forward. A considerably stylized carnivore of indeterminate species is biting the ibex in the neck. Upon the back of the ibex stands an eagle, in its turn biting the neck of the quadruped carnivore.

Upon first approaching these problems I felt that such a turmoil of animal combat could only be the product of a daring artist's imagination. In the course of my search, however, I found in Atkinson's "Amoor" the full counterpart of it, seen and registered by this artist-hunter when travelling with the Kirghis. His picture is reproduced as our Plate XXXIII: 2 and his vivid description of the incident runs as follows (l. c. pp. 145—147):

"I have mentioned in my former work that the bearcoot is trained for hunting by the Kirghis. But I have said nothing of his prowess in his wild state, when he sports on his own account, and sometimes plunders other ravagers of their prey. The following incident will illustrate his power and courage, besides

showing that he would prove a formidable opponent to any unarmed man, if hunger prompted him to dispute possession of his game.

Three of these dark monarchs of the sky were seen soaring high above the



Fig. 7. Kirghis hunting with eagle. After Brehm.

crags to the south, which were too abrupt to ride over. We therefore picketed our horses to feed, and began to ascend the mountain slope. In about an hour and a half we reached the summit, and descended into a small wooded valley, when we observed the bearcoots wheeling round towards the upper end, in which direction we hastened. Having gone at a quick walk for about three miles, we reached a rocky glen that led us into a valley of the Bean, known to be a favourite resort

of the animals we were seeking. A small torrent ran foaming through its centre, and mountains rose on each side far above the snowline. In singular contrast with the rich foliage and luxuriant herbage in the valley, the lower slopes facing the south were almost destitute of verdure, while those facing the north were clothed with a dense forest.

We had scarcely entered this sylvan spot when a singular spectacle was presented to our view. A large maral had been hunted down by three wolves, who had just seized him, and the ravenous brutes were tearing the noble animal to pieces while yet breathing. We instantly prepared to inflict punishment on two of the beasts, and crept quietly along under cover to get within range. We succeeded, and were levelling our rifles, when Sergae called my attention to two large bear-coots, poising aloft and preparing for a swoop. He whispered, 'Don't fire, and we shall see some grand sport.'

Presently one of the eagles shot down like an arrow, and was almost instantly followed by the other. When within about forty yards of the group, the wolves caught sight of them, and instantly stood on the defensive, showing their long yellow fangs, and uttering a savage howl. In a few seconds the first bear-coot struck his prey; one talon was fixed on his back, the other on the upper part of the neck, completely securing the head, while he tore out the wolf's liver with his beak. The other bear-coot had seized another wolf, and shortly both were as lifeless as the animal they had hunted."

The eagle who performed all these feats has been named "Bearcoot" by Atkinson. Yule: "*Travels of Marco Polo*", Vol. I, p. 399—400 says that its name in Eastern Turkestan and among the Kirghis is Búrgút, which he identified with the Golden Eagle (*Aquila chrysaëtos*).

Hunting with eagles is probably an outgrowth of hunting with falcons, adopted by hunters who had to deal with game too big for the falcons. I have not been able to follow the development of falcon hunting. The work by Berger and Grönberg mentioned above states that hunting with the falcon was known in China as early as in the seventh century B. C. According to the same authors the Greek historian and physician Ctesias, who lived about 400 B. C. and travelled extensively in Asia, speaks of a Central Asiatic tribe of dwarfs who hunted fox and wolf, not with dogs but with ravens, kites, hawks and eagles. How far the sport of hunting with eagles actually dates back I am not able to state with any authority. In a later paragraph we shall see from Marco Polo's graphic description that it was extensively pursued by Kublai Khan. That it was invented at a very early epoch by the Central Asiatic peoples seems to me highly probable from a fact which I am able to confirm by autopsy. In Inner Mongolia and probably over large parts of the Central Asiatic grasslands the eagles are strikingly in evidence. The country is often hilly with small crags of rock projecting out of the grassy slopes. Upon nearly every one of these small hills sits a large bird of prey spying for some edible game. I collected for our natural history museum

quite a number of them and in this material Professor Lönnberg has identified the following species:

The Eastern Steppe-Eagle (*Aquila nipalensis*)

The Upland Buzzard (*Buteo hemilasius*)

The Shangar Falcon (*Falco cherrug milvipes*).

It seems very likely that already at an early epoch the inhabitants of the grasslands learned to make use of these expert hunters. These ever-present birds of prey must also have appealed to the steppe nomads as personifications of the chase. Little wonder then that they used them so freely in their hunting scenes.

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A further group of plaques of combat, and in many ways the most important, is the one represented by our Plate XXXIV: 1<sup>1</sup>), depicting a longtailed carnivore holding in its mouth an argali whose body is slung over the beast's shoulder with the hind legs of the argali hanging down between the forelegs of the "tiger". Further examples of this group are reproduced for instance by Borovka: *Scythian Art*, Plate 47, and Rostovtzeff: *The Animal Style*, Plate XXV: 1 and XXVI: 4.

Following the trend of thought that we have developed when interpreting the "eagle plaques" as hunting scenes, we find it natural to apply the same interpretation to the "tiger plaques", as we may name this group. One difficulty in the way of regarding these plaques as representing hunting scenes is undoubtedly the heavy and sometimes bearlike type of the attacking animal. Our first task then must necessarily be to examine the species of carnivores that were used for hunting in ancient times.

Just as the falcon was in all probability the first and the most important bird of prey to be used as a hunting animal, it may be taken for granted that of the fourlegged carnivores the dog has at all times been the most common and the most useful servant of the hunter.

In his work "*Die antike Tierwelt*", Leipzig 1909, Otto Keller has collected a vast amount of facts pertaining to the early history of the dog. It seems evident that the wolf has contributed considerably to the evolution of the breeds of dogs that were used in ancient Asia for hunting purposes. In the Avesta occurs the question as to which is the most savage, a dog the offspring of a male wolf and a bitch or one whose parents were a dog and a she-wolf.

But it is furthermore related that in India dogs were brought to mate with tigers and that the resulting breed was of a strength capable of tackling even the lion. The Indian king Sopeithes presented to Alexander the Great not less than a hundred and fifty dogs of extraordinary size and strength, and four of these, when acting together, were able to overpower a lion.

<sup>1</sup>) (K. 11276: 4.) Karlbeck 30/31: 541. Bought in Peiping.

In addition to the tales of these tiger-dogs there are also ancient stories of pairing between lions and dogs. In the light of modern eugenics these statements seem most unlikely, but for our purpose it is a very important fact that such stories were actually current in S. W. Asia in the times when the Eurasian plaques



Fig. 8. Hunting leopard and deer. Greek vase painting. After Furtwängler-Reichhold.

were made. Such wonderful tales must have spread like wild fire among the hunters of Asia and may easily have inspired the steppe artists to depict hunting scenes in which the attacking beast is a blend of carnivorous types.

At any rate, there is ample evidence that the ancient peoples hunted with very strong and heavy dogs. The reliefs uncovered in the ruins of Nineveh show a wild-horse hunt with very large dogs.

Marco Polo tells of enormous Tibetan dogs which were used for hunting the wild yak.

Just as the hunters of bygone times developed their method of hunting with trained birds by supplementing the light falcon with heavier and stronger species, such as kites and, above all, eagles, they also took into their service quadrupeds that were stronger or in other respects more efficient than the dog.

One of these is the hunting-leopard or Cheeta (*Acinonyx jubatus* Schreb.), a slender long-legged animal, in its build and habits half feline, half canine. It is easy to train and is for a short distance the swiftest of all quadrupeds. It is still in use among the Indian princes and is carried to the hunt either in a car or sitting on horseback behind the hunter.

We reproduce here (fig. 8) from Furtwängler and Reichhold: *Griechische Vasenmalerei I*, Plate 3, a detail from a Greek vase-painting depicting a deer attached by a "panther", which animal I would prefer to call a hunting leopard from the evidence of the animal's slender build.

In this connection we reproduce in fig. 9 from Th. Panofka: *Bilder antiken Lebens*, Plate V: 7, another hunting scene from a Greek vase. The feline(?) on the deer's back looks short-legged, though this impression may possibly be due to the perspective. Noticeable is that the dress of the archers is somewhat reminiscent of that of the Scythians as shown by the Kul Oba vase.

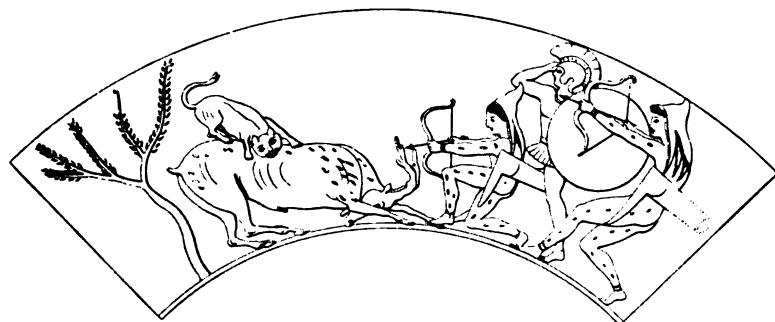


Fig. 9. Hunting scene. Greek vase painting. After Th. Panofka.

Marco Polo (Yule edition vol. I., p. 397—398) gives in his graphic description of Kublai Khan's great spring hunt the following list of his hunting animals:

"The Emperor hath numbers of leopards trained to the chase, and hath also a great many lynxes taught in like manner to catch game, and which afford excellent sport. He hath also several great Lions, bigger than those of Babylonia, beasts whose skins are coloured in the most beautiful way, being striped all along the sides with black, red and white. These are trained to catch boars and wild cattle, bears, wild asses, stags, and other great or fierce beasts. And 'tis a rare sight, I can tell you, to see those lions giving chase to such beasts as I have mentioned! When they are to be so employed the Lions are taken out in a covered cart, and every Lion has a little doggie with him. (They are obliged to approach the game against the wind, otherwise the animals would scent the approach of the Lion and be off.)

There are also a great number of eagles, all broken to catch wolves, foxes, deer, and wild goats, and they do catch them in great numbers. But those especially that are trained to wolf-catching are very large and powerful birds, and no wolf is able to get away from them."

The leopards spoken of are of course the hunting leopard. Yule makes some observations on the use of the Lynx as a helper in the hunt. "Hunting Lynxes were used at the court of Akbar. They are also mentioned by A. Hamilton as so used in Sind at the end of the 17th century. It is still occasionally used in the chase by natives of rank in India."

The striped lions used by Kublai in the hunt were of course tigers.

Berger and Grönberg state (l. c. p. 58) that in ancient India trained tigers and

lions were used to hunt buffalo and bear, and it is suggested that this custom was inherited from the Persians and Assyrians.

The same authors relate (p. 36) that in ancient Egypt hunting leopards and even lions were used for hunting purpose.

So far we have only dealt with such carnivores as are on record as hunting animals in the service of Man. But it seems quite likely that certain other species, specially the Lynx and the Glutton (wolverine) in their wild state, attracted the interest of the hunter-artists. According to Brehm, these animals in the forests of southern Siberia lie in hiding upon the branches of trees overhanging the habitual tracks of the elk and spring upon that animal as it passes beneath them.

Everything goes to show that the ancient hunters of Siberia were very keen observers of wild animal life. A scene such as that just depicted, a Lynx or a Wolverine springing from its hiding-place upon the royal game of the forest, must have filled those ancient people who boasted of being excellent hunters with awe and admiration. The wolverine, because of his insatiable greed, is profoundly detested by all hunters, and it seems quite likely that they tried their magic upon him also with the idea of getting control over a dreaded competitor.

Last but not least, it should be remembered that the woods of southern Siberia were the haunt of the king of all beasts of prey, the Siberian Tiger, a race much bigger and stronger than its Indian cousin. The ordinary hunter of the woodlands and the steppe who heard the wonderful tales of the mighty Khans using the tiger as a servant at the big hunts was readily induced to depict in the hunting scenes designed for his personal adornment this the most powerful of all four-legged hunters.

Among the plaques of combat there is one, repeatedly reproduced, (see for instance Rostovtzeff: *The animal style in South Russia and China*. Plate XVI: 2). This plaque represents a wild boar hunt. The boar is ripping open the belly of a horse whose rider has taken refuge in a tree. To the rescue comes another horseman, who shoots his arrow at the beast.

The fact that we have here an undisputed hunting scene, only that the attackers are men, not animals of prey, seems strongly to support our idea that hunting scenes actually observed by the hunter-artists have served as models for all the naturalistic plaques of combat.

How these naturalistic beginnings were in the course of time further evolved by the artists, and how foreign loans, such as the fabulous monsters the griffin and the dragon, were introduced on to the scene, has been elucidated in a masterly way by Rostovtzeff and Borovka.

## THE ALTAI ROCK CARVINGS.

The Magdalenian art, with which we have compared the Eurasian Animal Style, consists of two main components: wall carvings and paintings in the caves where lived the Magdalenian hunters, and small decorated tools and household objects in bone and stone, adorned with carved pictures of animals, very similar to the large-size representations of the same animals upon the cave walls.

The Eurasian steppe art of the late Bronze Age is largely an art of small metal objects, gold and bronze: knives, daggers, arrow heads, adornments of the hunters, their women and their horses and some few bronze cauldrons.

These steppe finds evidently correspond only to the small objects carved in stone and bone by the Magdalenian hunter-artists, and our comparison has thus so far been somewhat one-sided. This is the more regrettable as the study of the modern hunting peoples, such as the Australian aborigines, the Amer-Indians, the Bushmen and others, have taught us that primitive hunting races have always shown an inclination to take advantage of existing rock-walls to express in large-sized drawings and paintings their hunting magic.

From the Ordos region and, in fact, from the whole southern frontier of the Gobi desert we do not know of a single rock drawing associated with the small bronze art of the Hiung-nu and kindred tribes. I would hazard a guess that such rock drawings do exist and that they will be readily found when once proper attention has been called to this inviting field of research.

On the northern frontier of the Gobi the situation is far more favourable. Thanks to the ardent work of Russian scientists such as W. Radloff and others, and Finnish explorers such as J. R. Aspelin, Hj. Appelgren-Kivalo and J. G. Granö, we know of rich groups of rock drawings executed upon mountain cliffs in the Altai region.

Some of the earlier reproductions of these rock carvings were not as carefully surveyed and executed as we would desire, and for this reason I find it better for the present purpose to collect my illustrations from one single publication, the monumental work published last year by Hj. Appelgren-Kivalo on behalf of the Finnish Archaeological Society, and which makes available to the scientific world the careful survey of the Altai rock drawings carried out in the years 1887—89 by J. R. Aspelin in cooperation with Appelgren-Kivalo, K. Wuori, A. H. Snellman-Virkkunen and A. O. Heikel. This monograph "*Alt-altaische Kunstdenkmäler*", Helsingfors 1931, reaches a high standard of excellence as far as topographical record and careful reproduction of the rock engravings are concerned. But it makes no attempt at a scientific analysis of the material, leaving unanswered such fundamental questions as the chronology of the apparently widely different elements of the cliff carvings, the meaning and purpose of these engravings etc.

Fortunately, according to a verbal communication made to me by Professor A. M. Tallgren, we can expect in the immediate future from his master hand a full analysis of this material, to be published in *Eurasia Septentrionalis Antiqua*. Pending the appearance of this much-needed treatise on the Altai rock carvings, we may for the moment content ourselves with the conclusion that the majority of these rock pictures are probably approximately contemporaneous with the Eurasian Animal Style, as evidenced, *inter alia*, by the rather frequent occurrence among the objects depicted of outlines of the cauldrons that are included in the Animal Style.

The free-standing stone sculptures, the Babas, and the writings in the Tu-küe script are evidently more recent than the majority of the pictures. It seems quite likely that ancient tradition, supported by the attraction offered by the rock pictures, induced the Tu-küe to carve their writings where their ancestors, the Hiung-nu, once carved their animal figures.

The lure of the ancient places of worship evidently prevailed until modern times, as shown by the occurrence of Russian crosses among the ancient animal pictures.

With reference to the richest group of cliff pictures, that of Pisannaja-Gora, it has been proved by Aspelin and Appelgren-Kivalo that there exist two generations of rock drawings, one artistic, with strength in the movement of the animals and the composition of epic scenes, and another, more primitive, which according to Aspelin is the more recent of the two. For the exact dating of these different elements of the rock pictures we must wait for Professor Tallgren's paper. It may suffice for our present purpose to indicate the probability that the majority of the pictures were made by the Hiung-nu or their descendants.

Out of the vast material of rock pictures reproduced in the work "Alt-altaische Kunstdenkmäler" I have selected a small number of special interest for our present purpose and these are reproduced in Plate XXXV. The majority of these pictures belong to the rich group on the hill Pisannaja-Gora near the village of Suljek. There are in our plate only two pictures from other places: fig. 7, found on Mt. Aglaktij, on the shore of the Yenissei, and fig. 11, reproducing a detail of the engravings on Mt. Argoa. All these localities are north of the Altai ranges.

Figs. 1—3 depict hunting scenes.

Fig. 1. (A.<sup>1</sup>) 77 upper row) illustrates two mounted archers hunting Wapiti deer. An animal is lying dead on the ground with an arrow in the neck. Another deer, shot at by the hunter on the right, is sinking to the ground hit in the back. A third animal, hit in the right groin by the hunter on the left, is still running. The fourth deer, largest of all seems still unhurt.

<sup>1</sup>) A-numbers refer to the numbers of the illustrations in "Alt-altaische Kunstdenkmäler".

Fig. 2. (A. 76) shows a mounted archer with dog hunting a stag.

Fig. 3. (A. 77, middle row): two mounted hunters shooting at a large sheep.

Figs. 4—7 bring us into a new field, the family scenes.

Fig. 4 (A. 77, lower row, right) pairing of two hornless, indeterminate animals.

Figs. 5—6 (A. 77, lower and upper row) show mating fights of camel stallions.

Fig. 7 (A. 135) may be interpreted as a ritual wedding.

Figs. 8—11 convey to us still another group of ideas, men in animal masks.

Figs. 8—9 (A. 77, lower and middle row) repeat the same motif, a bear-like beast standing erect holding a club or axe in its forelegs.

Fig. 10 (A. 76 left) a figure in an animal mask walking erect with stick in hand.

Fig. 11 (A. 302) a group of two men, one in animal disguise, possibly working together to imitate a four-legged animal.

The examples selected from the rich material of Altai rock engravings suffice to show how these mural pictures exhibit an essential enlargement of the nomad art, emphasizing three essentials of the hunting magic: hunting episodes, family scenes and representations of men in animal masks.

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## SHORTCOMINGS AND FALLACIES.

In the preceding chapters I have tried to carry through to its extreme consequences the idea of hunting magic as the moving force underlying the Eurasian Animal Style. It has been to a considerable extent a naturalist's views on a great problem of art.

From the very outset I have been aware that many colleagues will probably not share my ideas and that this article will become the object of considerable criticism.

Let me then frankly confess to my critics that, in carrying this idea of hunting magic to extremes, I have by no means gone thus far blindfold. Being convinced, from the documentary evidence here submitted, that hunting magic was the *main* and *primary* motive force in the building up of the Animal Style, I have deemed it to be a sound scientific method to work my way along the chosen road as far as I could reach.

However, in doing so I have been fully conscious of the fact that only part of my evidence, as for instance the mating scenes, is fully conclusive, whereas others, such as the frames with a "hoof"-pattern, are, at the very best, *possibly* to be given the interpretation here presented. The ambiguity of the evidence is specially felt in all that concerns the multiplication of individuals, as it is apparent that an artist may have repeated the animals or parts of them in order to save himself the trouble of drawing a more intricate design, much in the same way as the makers of the large tomb tiles of the Han period repeatedly used one or only a few seals for the whole tile as a matter of expediency.

A very far-reaching objection to my paper is no doubt the fact that I have selected my material to comprise preferably those objects in which naturalistic representation is prevalent. It may well be said that by my doing so my treatise has been so simplified as to avoid those highly stylized and intricate representations of fabulous monsters that have specially attracted the eminent scholars who have made us familiar with the Animal Style.

I have by no means overlooked the one-sidedness of my survey, but on the other hand I have thought it better to leave for the present those very complicated and strongly stylized designs whose first beginnings, with their Iranian affinities, have been so admirably elucidated by Rostovtzeff and others. In limiting my observations for the most part to the simple naturalistic objects of the animal style, I have been able to follow the hitherto rarely trodden road of the naturalist-hunter and, by keeping constantly in touch with nature, I may have been able to open up a new vista over this field of research.

It may be useful at this point to give an outline of my personal conception as to the origins and development of the varied and in part very heterogeneous elements that together build up the Animal Style.

To judge from the evidence produced by Rostovtzeff, Borovka and others, there is little doubt that the beginnings of the Eurasian Animal Style dates back into the dim past of the Stone Age and the early metal ages. It is even possible that the analogies between the Animal Style of the later Palaeolithic time and that of the late Bronze Age in the Eurasian steppe girdle are not merely a matter of parallelism, as has been surmised in our chapter "The Palaeolithic parallel". It is quite possible that future more profound research will enable us to see an unbroken ancestry right through the history of mankind from one to the other of the two great manifestations of the Animal Style.

Be this as it may, there is little doubt that the first breeding ground of the Animal Style upon the Eurasian steppes was among primitive hunters and herds-men who, living in small and very simple communities, struggled hard to maintain themselves against the vicissitudes of Nature, as well as against the inroads of human enemies. A primitive population living this hard and simple life is apt to step beyond the road of immediate realities and seek in the supernatural (which in the imagination of primitive man is readily blended with the substantial manifestation of life) the much-needed help and support in the struggle for maintainance. Such an archaic population, living in intimate contact with the wild life surrounding them, draws freely from it for their worship, their mystic rites and their art.

In addition, it is quite possible that the rise of the Animal Style in the Eurasian steppes is due partly to cultural loans from abroad. It becomes increasingly evident that the population in at least the western part of the steppe area was in the first millennium B. C. largely Iranian, and it seems that these Iranian immigrants brought with them an already far advanced art treasure, including elements of an animal style, which had blossomed in Mesopotamia and in Iran as early in the third millennium B. C. To this Iranian inheritance are due some of the more complicated and strongly stylized elements of the Eurasian Style as evidenced above all by Rostovtzeff.

But the hunting activities of the Eurasian steppe-dwellers brought into this ancient art a fresh influx of immediate local elements. The abundance in the Eurasian Style of such animals as the elk, the yak, the steppe horse and some others proves beyond doubt that to a very considerably extent the style is autochthonous. We should visualize the fact that all over the vast extent of steppe and desert the simple hunting population was constantly drawing upon the wild life for their magic practices and their art.

On the other hand, at the numerous and rapidly changing small and large courts there developed a richer and more sophisticated style, which, taking advantage of the easy intercourse with other courts and centres of political and military importance, borrowed freely from the high cultures of the time, Iranian, Greek and Chinese.

It is only by realizing the complicated interaction between the naturalistic,

locally stamped and magically influenced, simple art of the ordinary hunter and herdsman, and the far richer, strongly stylized and partly foreign art treasury of the numerous nomad courts, that we have found the proper way of approach to the life history of this marvellous art.

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Upon one point at least the theory of hunting magic in the Animal Style is in need of a superstructure.

Some writers have emphasized that certain objects may be *clan* or *totem* emblems, and there seems to be strong evidence in favour of this interpretation.

In a passage quoted above from Stanislas Julien on the life of the Tou-kioue (Tu-küe), we read as follows:

"Au sommet de la hampe de leurs drapeaux, ils placent une tête de louve en or. Les satellites du roi s'appellent *fou-li*, mot qui, en chinois, signifie *lang* (loup). Comme ils sont issus d'une louve, ils ne veulent pas oublier leur ancienne origine."

Here we have the literary proof of *the wolf* as the clan emblem of the Tu-küe. This custom should be supplemented by the following passage explaining its origin (Stanislas Julien: *Documents sur les Tou-kioue*, pp. 326—329):

"Les Tou-kioue sont une race particulière des Hiong-nou, dont le nom était A-sse-na. Ils formèrent une horde à part, mais dans la suite ils furent battus par un roi voisin qui extermina toute leur famille, à l'exception d'un jeune garçon âgé de dix ans. Les soldats, voyant sa jeunesse, n'eurent point le courage de le tuer. Ils lui coupèrent les pieds et le jetèrent au milieu des herbes d'un marais. Il y eut une louve qui le nourrit de viande. Quand il fut devenu grand, il s'unit avec la louve qui devint aussitôt pleine. Ce roi, ayant appris que l'enfant vivait encore, envoya de nouveau des hommes pour le tuer. Ceux-ci, voyant une louve à ses côtés, voulurent la tuer avec lui. La louve s'enfuit aussitôt sur une montagne située au nord du royaume de Kao-tchang (pays des Oigours). Dans cette montagne, il y avait une profonde caverne, et dans la caverne une plaine unie, couverte d'herbes touffues, qui avait plusieurs centaines de li de tour, et où de hautes montagnes s'élevaient de tous côtés. La louve, s'étant réfugiée dans cette caverne, mit au monde dix garçons. Ceux-ci, parvenus à l'âge mûr, prirent au dehors des femmes qui devinrent bientôt mères. Dans la suite, chacun d'eux prit un nom de famille; A-sse-na était l'un d'eux. Leurs fils et leurs neveux se multiplièrent, et peu à peu ils forinèrent des centaines de familles. Après plusieurs générations, ils sortirent de la caverne et furent soumis par les Jou-jou. Ils s'établirent au sud des monts Kin-chan (monts Altaï), où ils fabriquaient des instruments de fer pour les Jou-jou. Un des monts Kin-chan (Altaï) a la forme d'un casque; et comme dans leur langue un casque se dit Tou-kioue, ils ont tiré de là le nom de leur nation.

Suivant un auteur, le fondateur de la nation des Tou-kioue était originaire du royaume de So, qui était situé au nord du pays des Hiong-nou. Le chef de cette horde s'appelait A-pang-pou. Il avait dix-sept frères, dont l'un s'appelait I-tchi-ni-sse-tou; il était né de la louve. Comme A-pang-pout et ses frères étaient d'un naturel stupide, leur royaume fut promptement détruit. I-tchi-ni-sse-tou, qui était doué de facultés surnaturelles, pouvait faire venir le vent et la pluie. Il épousa deux femmes qu'on disait filles du génie de l'été et du génie de l'hiver. L'une mit au monde quatre garçons, dont l'un se changea en cygne; le deuxième établit son royaume entre les rivières A-pou-chouï et Kien-chouï; on l'appelait Ki-ko. Le troisième établit son royaume sur les bords de la rivière Tchou-tche; le quatrième se fixa sur le mont Tsien-sse-tchou-tche-chi; c'était l'aîné des quatre fils. Sur cette montagne, vivait une horde de la même race qu'A-pang-pou, et qui souffrait beaucoup de la froideur de la rosée. Le frère aîné produisit du feu, rechauffa les habitants et les nourrit, de sorte qu'ils purent conserver la vie. Aussitôt ils se soumirent à leur frère aîné, le choisirent pour chef, et le surnommèrent Tou-kioue, c'était No-tou-lou-che. Il eut dix femmes, et tous les fils qu'elles eurent tirèrent leur nom de famille de celui de leur mère. A-sse-na était le fils d'une de ses concubines. Après la mort de No-tou-lou-che, les fils des dix mères voulurent choisir l'un d'entre eux pour leur chef. Ils se rendirent tous au pied d'un grand arbre, et firent ensemble la convention suivante: Celui qui sautera le plus haut vers l'arbre deviendra notre chef. Le fils d'A-sse-na, qui était jeune, ayant sauté plus haut que les autres, tous les fils le choisirent pour chef et le surnommèrent A-hien-che. Quoique ce récit s'écarte de la tradition, ce fils descendait aussi de la louve. Son successeur fut appelé Tou-men. Peu à peu, sa horde devint nombreuse; et alors elle commença à se rendre aux frontières de la Chine pour vendre de la soie et entrer en relations avec le royaume du Milieu."

This quotation, where reference is repeatedly made to the origin of the people from a wolf, should be compared with the following statement, which Professor Karlgren has kindly communicated to me:

"In the annals of the Northern Wei dynasty (Wei Shu, book 103) *Kao-chü-chuan* it is related how the tribe *Kao Chü* were the descendants of the "Red Ti" barbarians and that their language was closely related to that of the Huns. Their folk lore tells that a Khan of the Huns had two very beautiful daughters, whom he considered too good to be given to any earthly man. Far to the North, where no people lived, he built for them a tower and Heaven was invited to give them their proper mates. After four years of waiting there came an old wolf who watched the tower day and night and howled. He scratched out a cave at the base of the tower where he lived without ever abandoning the place. The younger of the two sisters drew the conclusion that, as she had been promised to Heaven, the wolf might be supernatural. She went down and became his mate and gave birth to sons. The descendants became numerous and formed a kingdom. This people loved to lengthen the tones and sing howlingly."

According to De Groot "Die Hunnen" p. 94, the best archers of the Hiung-nu were called the "eagle-archers", and eagle feathers were attached to the end of their arrows.

It is quite likely that several of the animals depicted on the Eurasian nomad bronze and gold objects will eventually be proved to have served as clan and totem emblems. In our Plate XXVII: 5 we have illustrated a pole-top in the shape of a hedgehog, and a similar piece has been recently found by our friend Mr. Karlbeck. It seems tempting — though it is far from conclusive — to interpret these hedgehog pole-tops in the light of the totem theory, and the same may be surmised with reference to other animals.

The development of totemistic symbols is common among hunters and food-gatherers such as the Australian aborigines and the Amer-Indians. It is easy to imagine how, as an outgrowth of the hunting magic, certain very important or otherwise significant animals were chosen as totems.

The occurrence of clan and totem emblems, very far from distracting us from our main line of thought, seems to form a logical outgrowth of the hunting magic as the basic factor and the primary motive force in the development of the Eurasian Animal Style.

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Having completed this paper I realize my indebtedness to my research-assistant Miss Barbro Dahlin, who with unfailing skill and interest has helped me in preparing the plates and corresponding descriptions.

I am also deeply indebted to Professor E. Lönnberg for many zoological notes, to Professor A. M. Tallgren for information on the Altai rock-carvings and to Professor B. Karlgren for frank criticism of my text.

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TABLE OF CONTENTS.

	Page
Introduction .....	221—225
Inventory of the Ordos bronzes: .....	225—271
Knives (Plates I—V) .....	227—235
Daggers (Plates VI—IX) .....	235—240
Axes and picks (Plate X) .....	240—242
Belt Buckles (Plates XI—XIII) .....	242—249
Chains (Plate XIV) .....	249—250
Annular discs and buttons (Plate XV and XVI) .....	250—253
Spoons, pendants and tubes (Plate XVII) .....	253—255
Nails, pendants and varia (Plate XVIII) .....	255—258
Vessels (Plate XIX) .....	258
The horse family (Plate XX) .....	259—261
Deer and camels (Plate XXI) .....	261—264
Sheep and goats (Plate XXII) .....	264—265
Argali sheep (Plate XXIII) .....	265—267
Cattle (Plate XXIV) .....	267—268
Carnivores, pigs etc. (Plate XXV) .....	268—269
Sundry animals (Plate XXVI) .....	270
Stylized animals (Plate XXVII) .....	270—271
The steppe nomads as hunters .....	272—278
The Palaeolithic parallel .....	279—284
Naturalism versus stylization .....	285—286
Family scenes (Plate XXVIII) .....	287—289
Multiplication of individuals (Plate XXIX) .....	290—293
Masked animals (Plate XXX) .....	294—295
The plaque of combat (Plates XXXI—XXXIV) .....	296—307
The Altai rock carvings (Plate XXXV) .....	308—310
Shortcomings and fallacies .....	311—315

## LIST OF PLATES.

	Description of plate, page
I. Knives .....	228
II. " .....	229
III. " .....	231
IV. " .....	232
V. " .....	233
VI. Daggers .....	236
VII. " .....	237
VIII. " .....	238
IX. " .....	239
X. Axes and picks .....	240
XI. Belt-Buckles .....	242
XII. " .....	244
XIII. " .....	247
XIV. Chains .....	249
XV. Discs and buttons .....	250
XVI. " " " .....	251
XVII. Spoons, pendants and tubes .....	253
XVIII. Nails, pendants etc. .....	255
XIX. Vessels .....	258
XX. Horses .....	259
XXI. Deer and camels .....	261
XXII. Sheep and goats .....	264
XXIII. Argali .....	265
XXIV. Cattle .....	267
XXV. Carnivores, pigs etc. .....	268
XXVI. Sundry animals .....	270
XXVII. Stylized animals .....	270
XXVIII. Family scenes .....	287
XXIX. Multiplication of individuals .....	290
XXX. Masked animals .....	294
XXXI. Mating fights .....	298
XXXII. Eagle plaque .....	298
XXXIII. Wolf-Eagle plaque .....	301
XXXIV. Plaques .....	304
XXXV. Altai rock carvings .....	309
XXXVI. Baba .....	250



**PLATES I—XXXVI**  
**to**  
**ANDERSSON: Hunting Magic in the Animal Style.**





Ordos Bronzes: Knives.





Ordos Bronzes: Knives.





Ordos Bronzes: Knives.





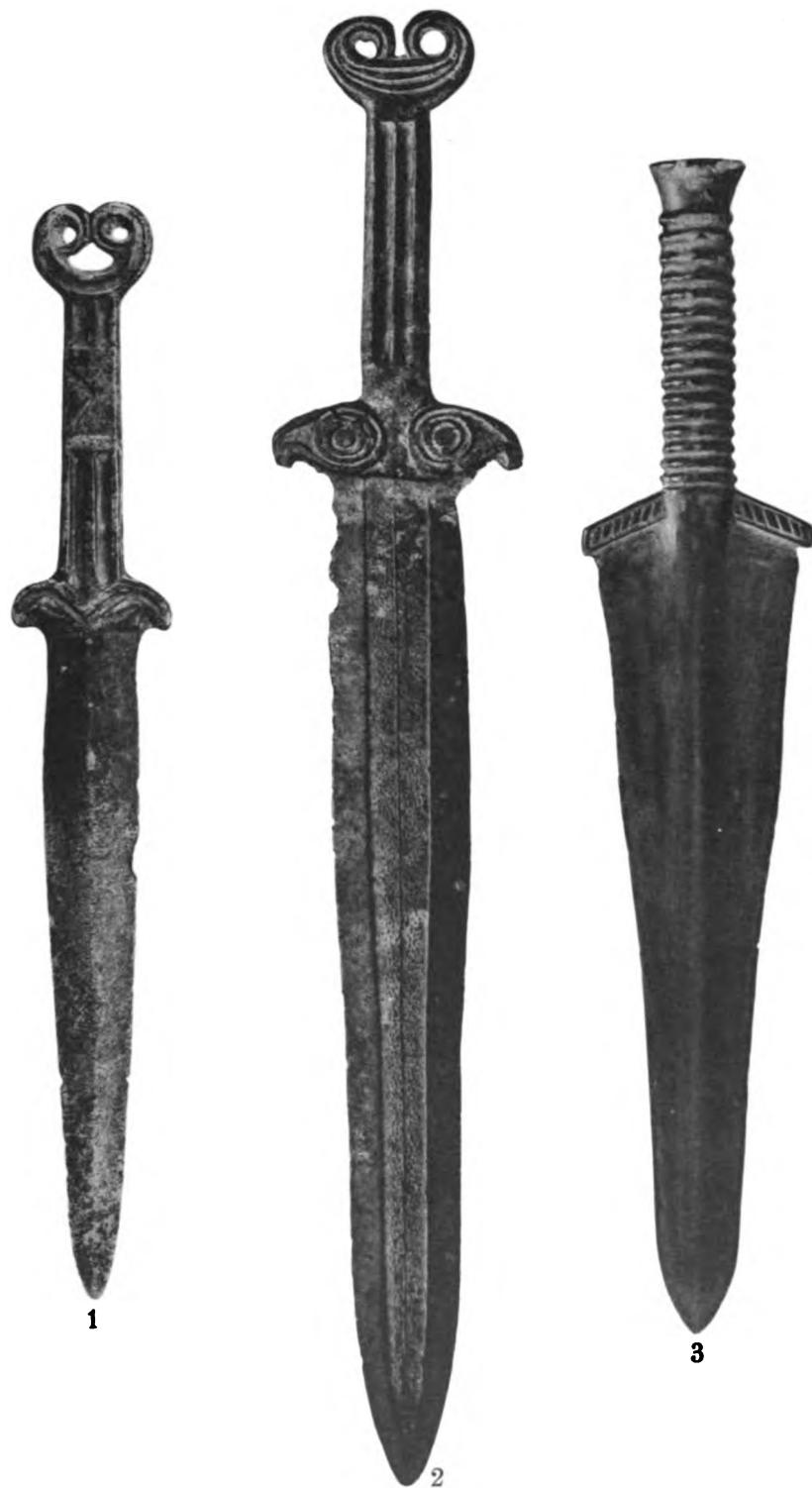
Ordos Bronzes: Knives.





Ordos Bronzes: Knives.





Ordos Bronzes: Daggers.





Ordos Bronzes: Daggers.





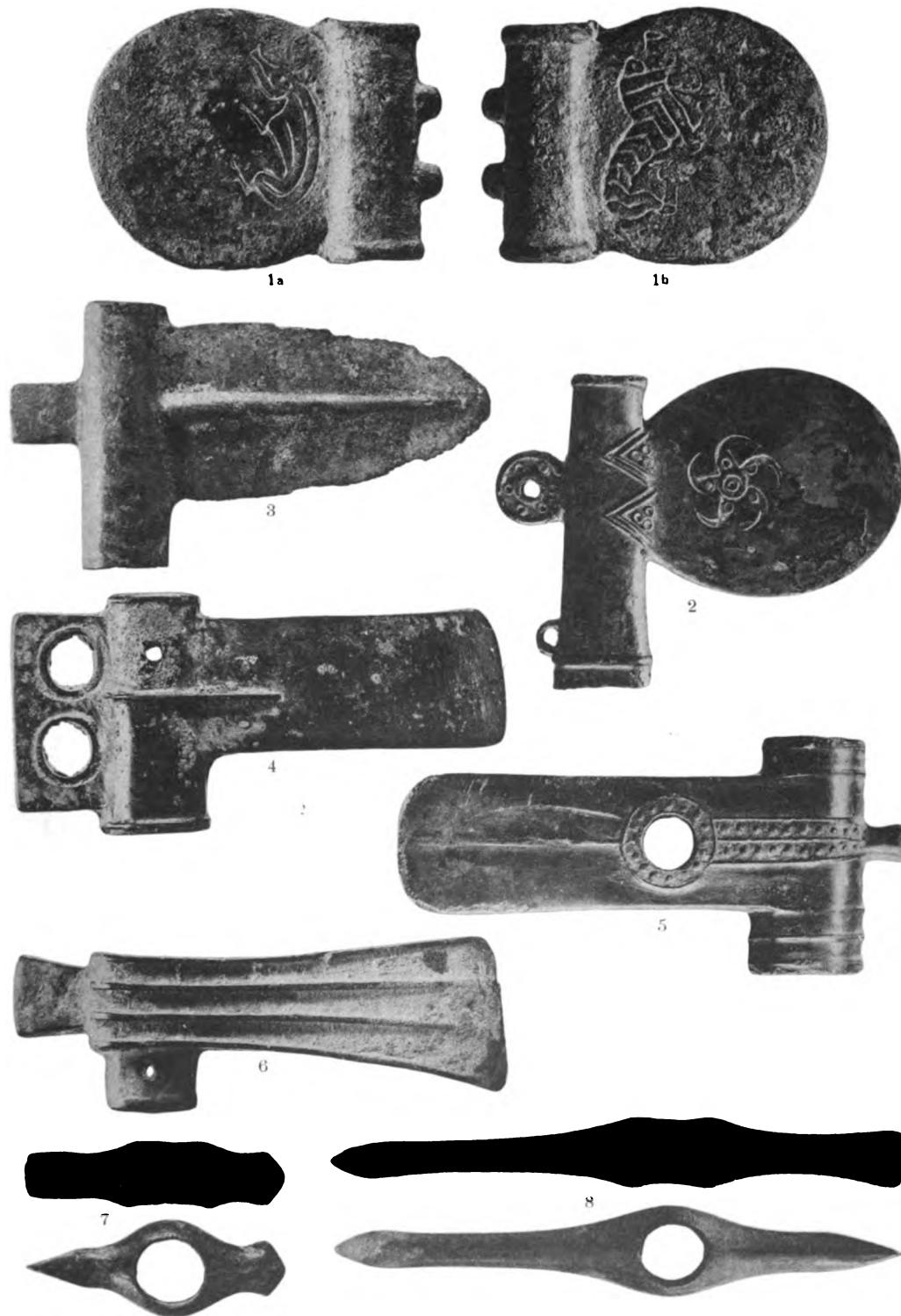
Ordos Bronzes: Daggers.





Ordos Bronzes: Daggers.





Ordos Bronzes: Axes and Picks.





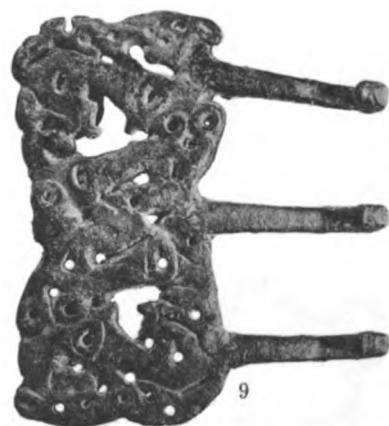
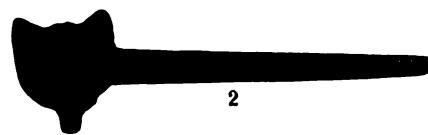
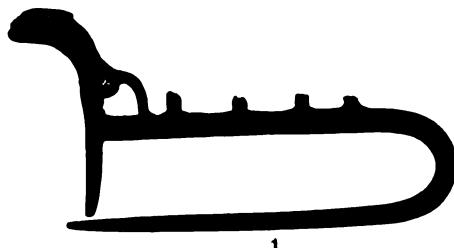
Ordos Bronzes: Buckles.





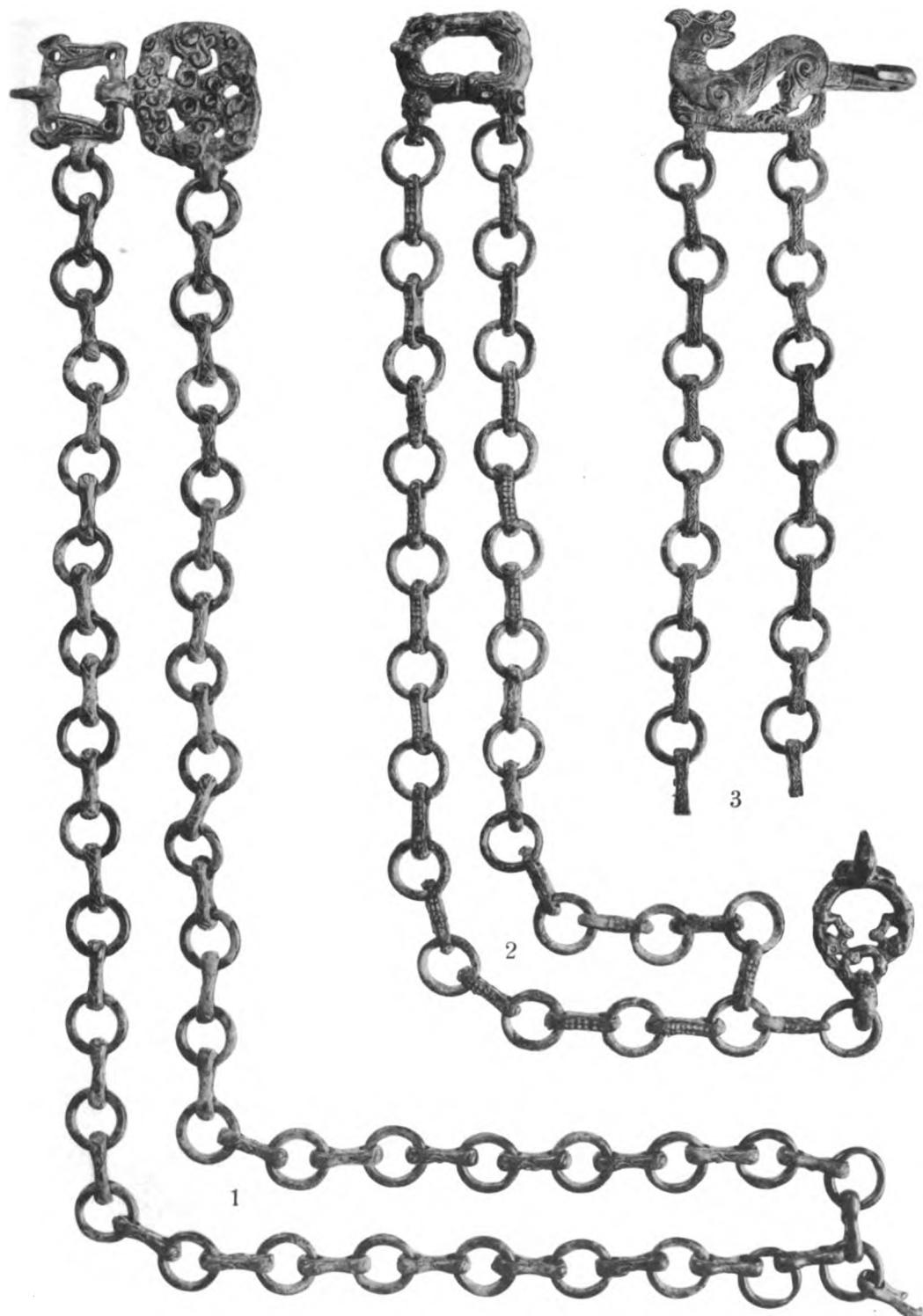
Ordos Bronzes: Buckles.





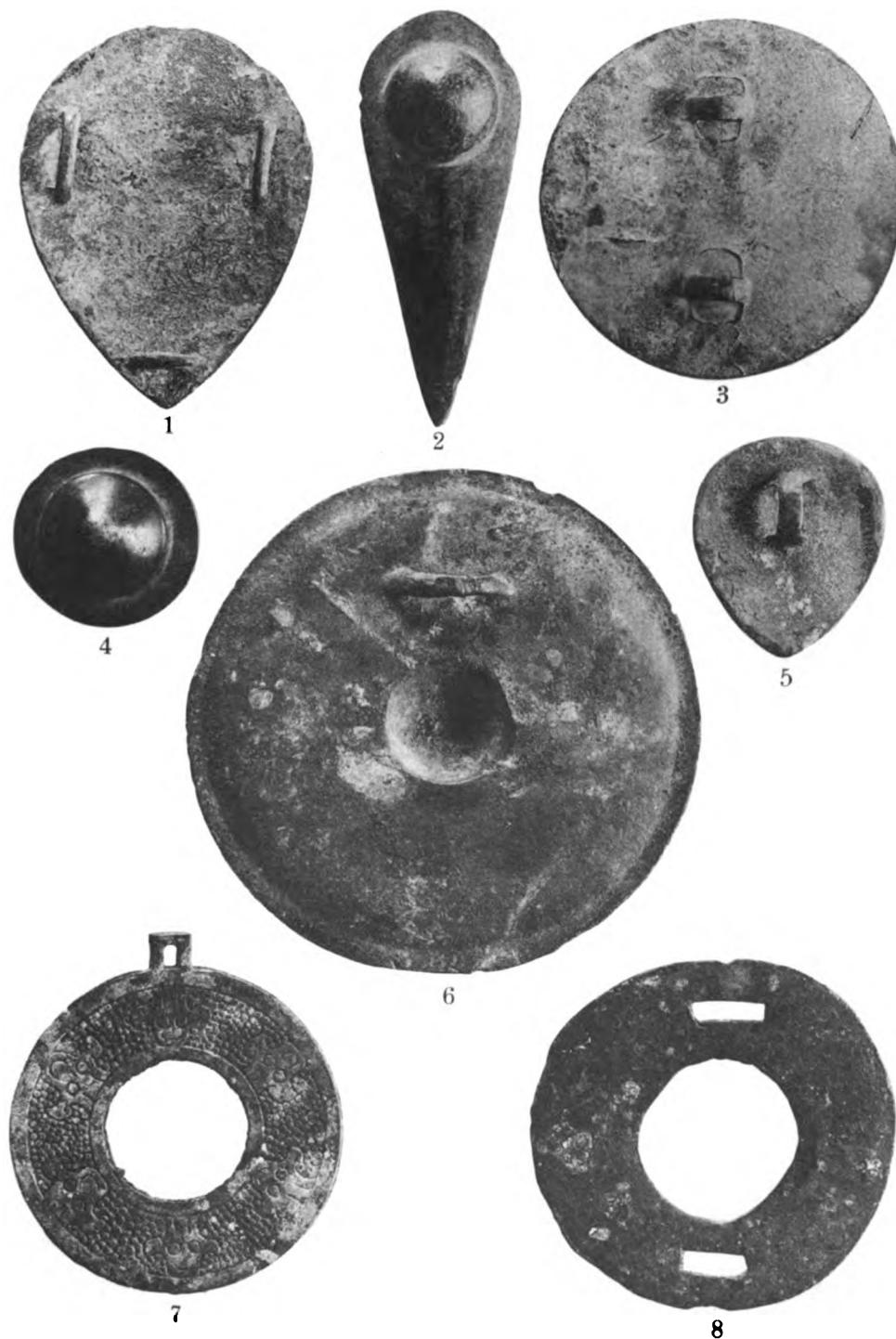
Ordos Bronzes: Buckles.





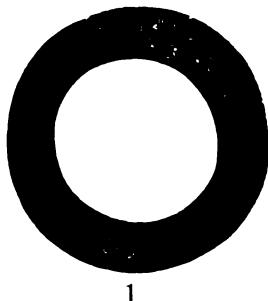
Ordos Bronzes: Chains.





Ordos Bronzes: Discs.





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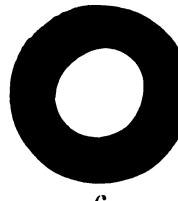
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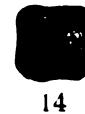
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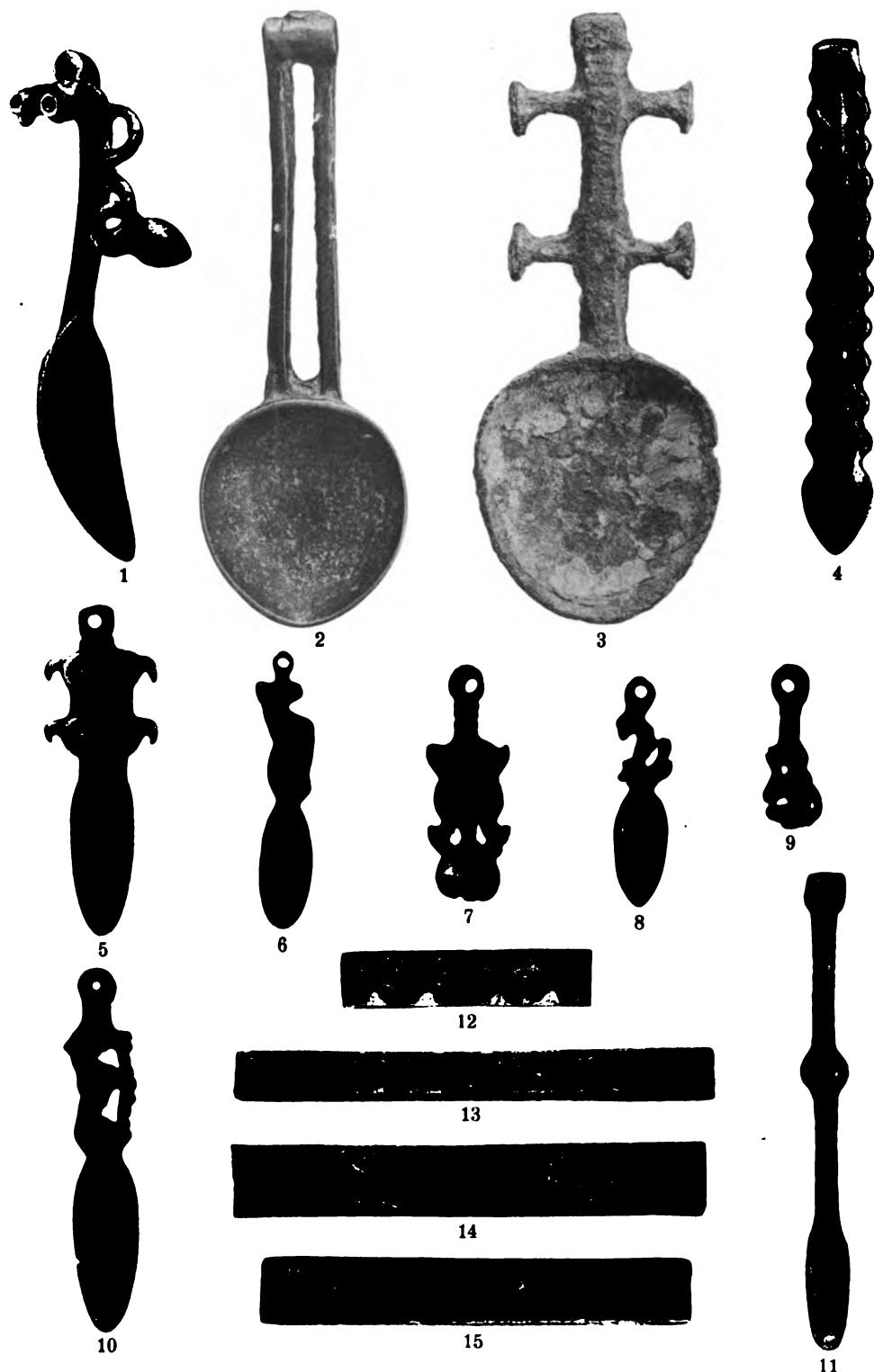
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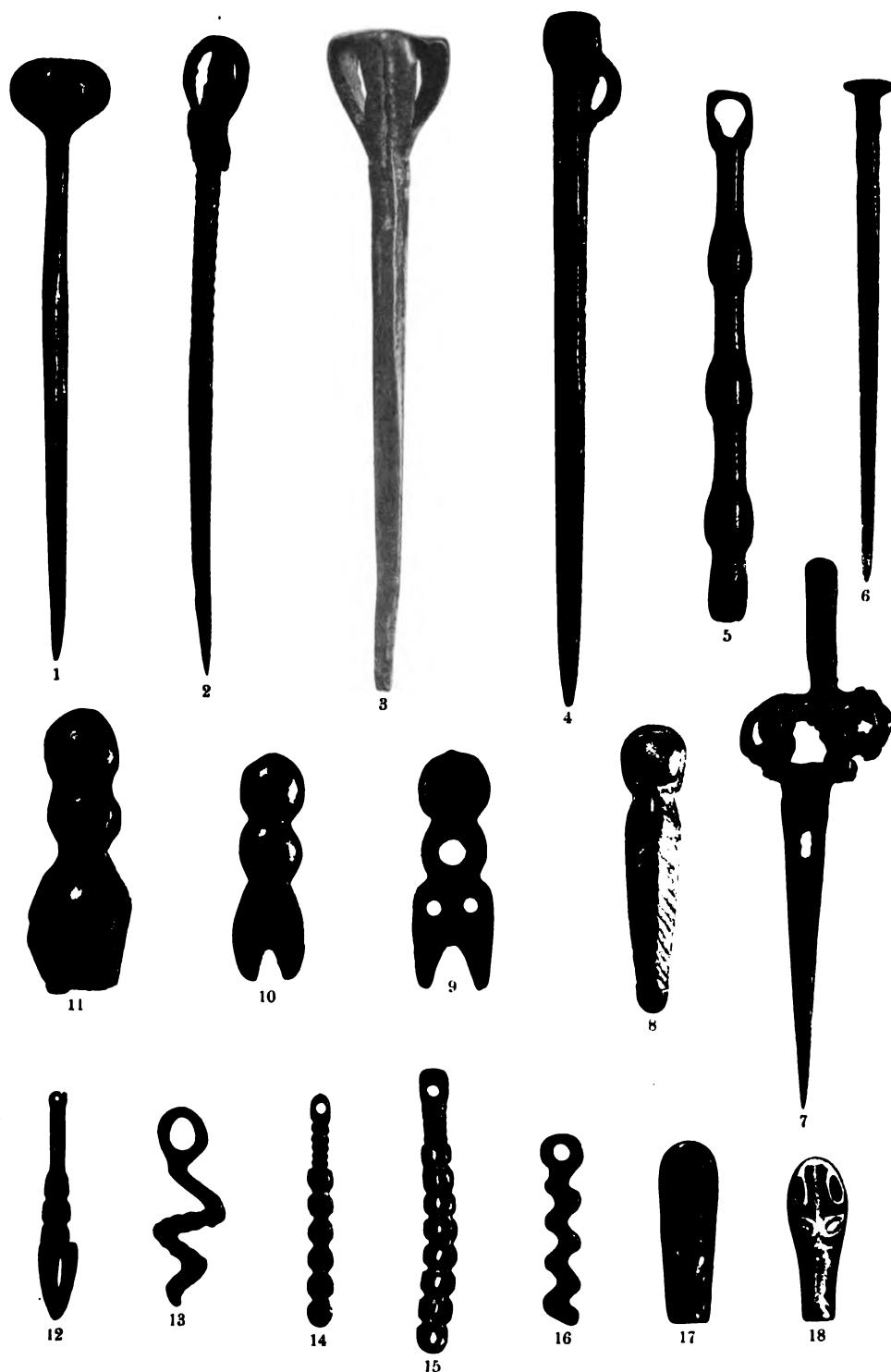
Ordos Bronzes: Discs, Rings, Buttons.





Ordos Bronzes: Spoons, Pendants, Tubes.





Ordos Bronzes: Nails and pendants.





Ordos Bronzes: Vessels.





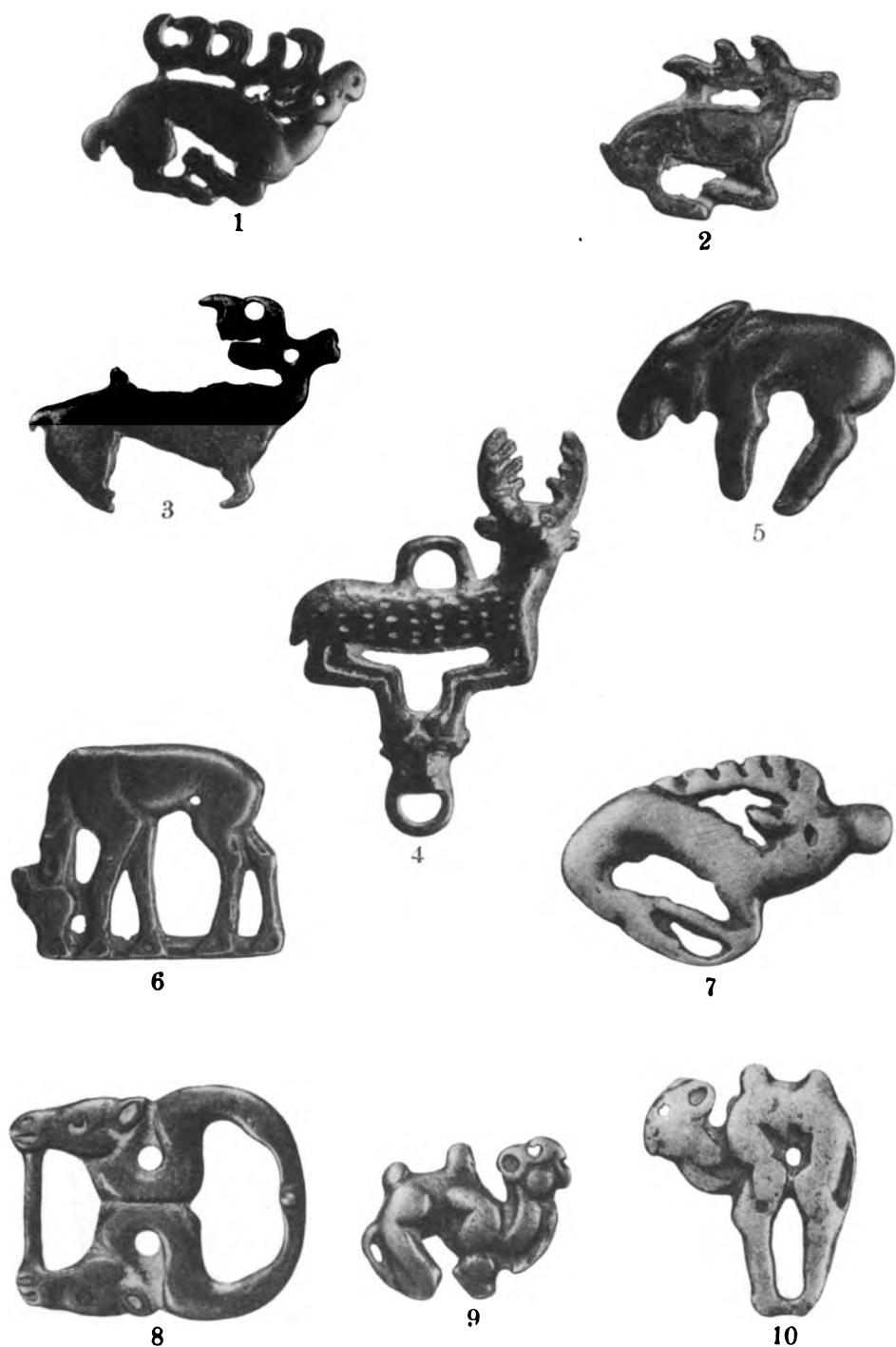
Ordos Bronzes: Vessels.





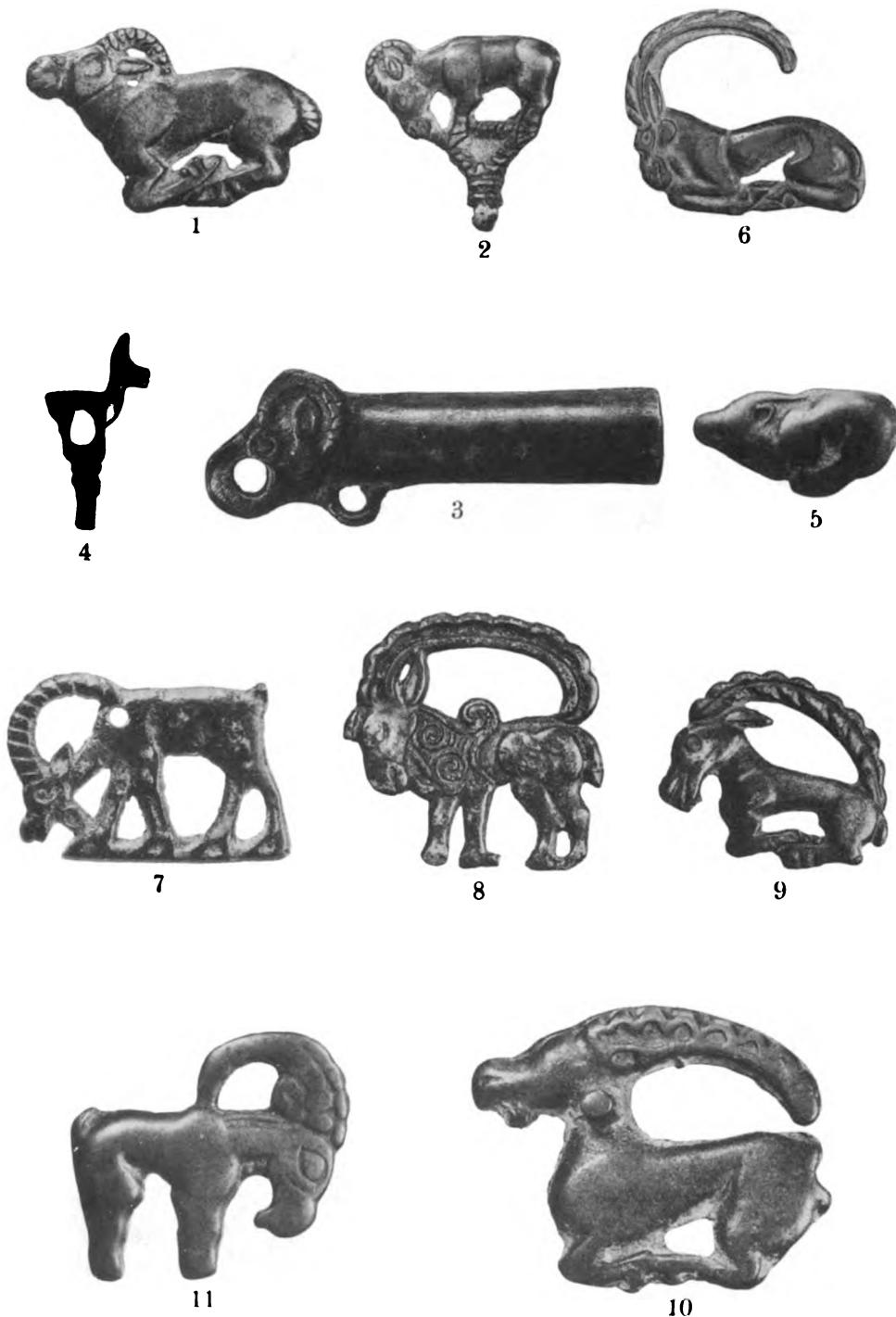
Ordos Bronzes: Horses.





Ordos Bronzes: Deer, Camels.





Ordos Bronzes: Sheep. Goats.





1



2



3



4

Ordos Bronzes: Argali Sheep.





1



2



3



4



5



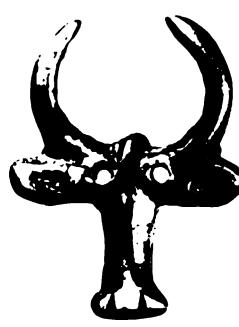
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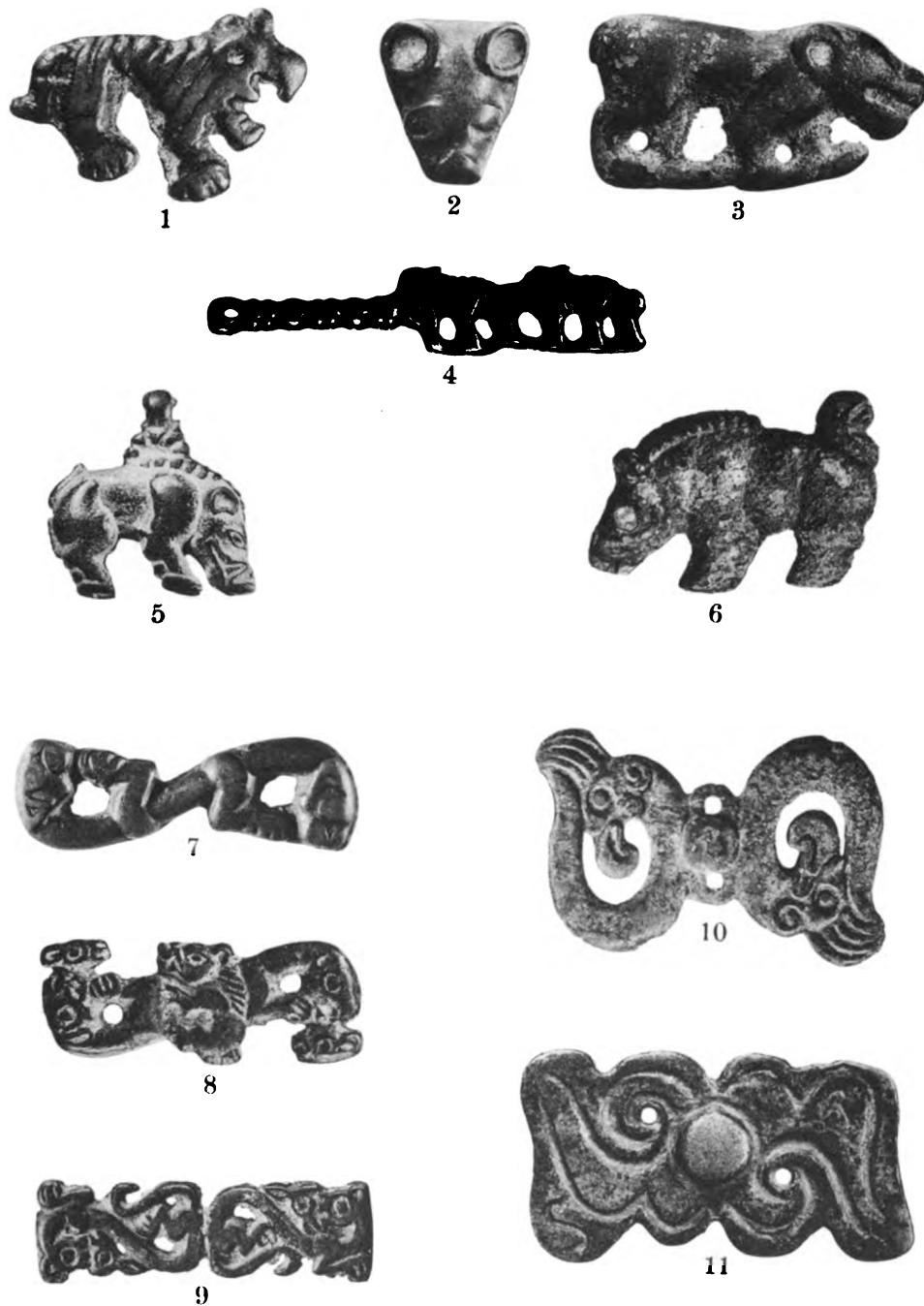
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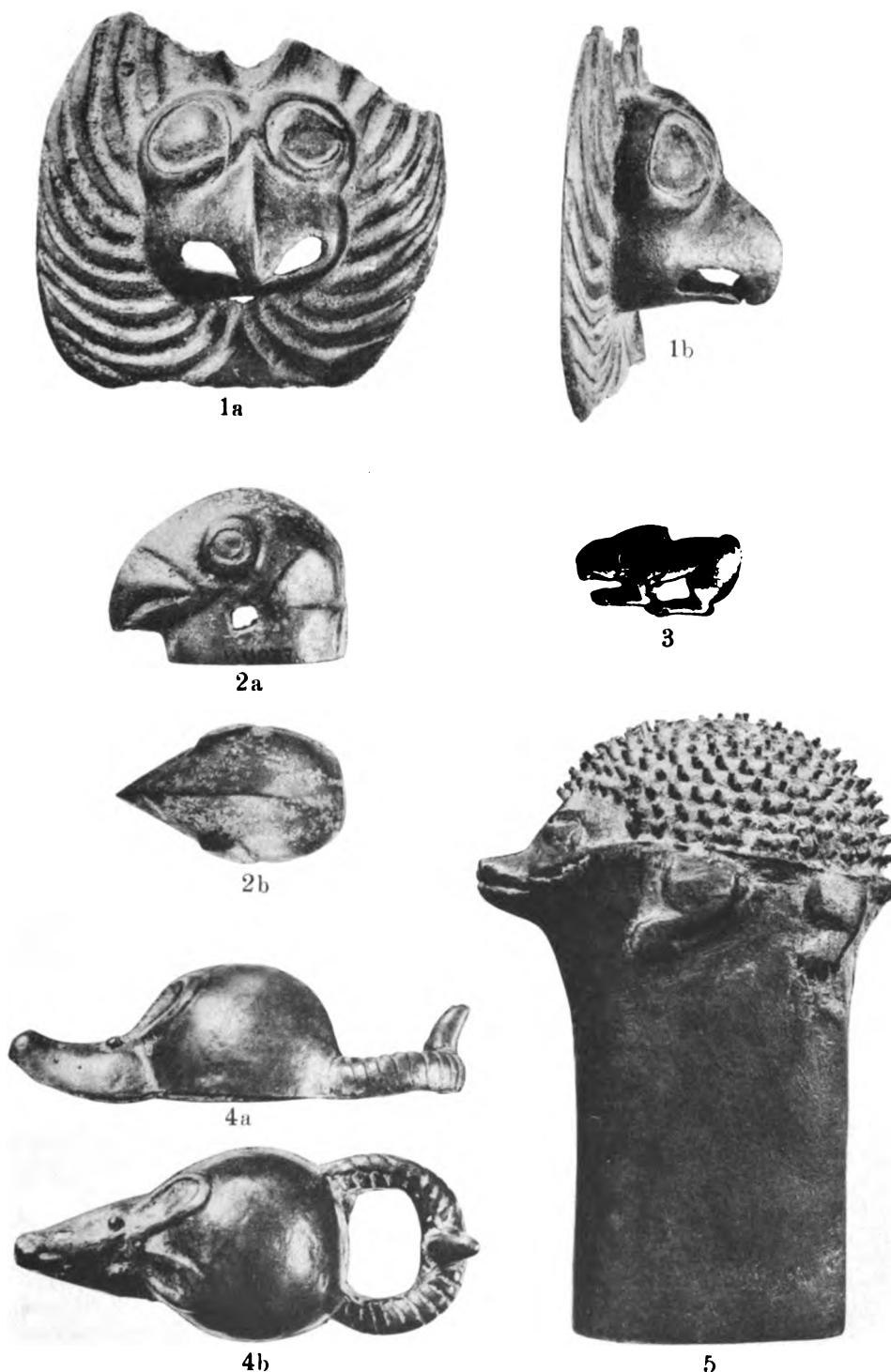
Ordos Bronzes: Cattle.





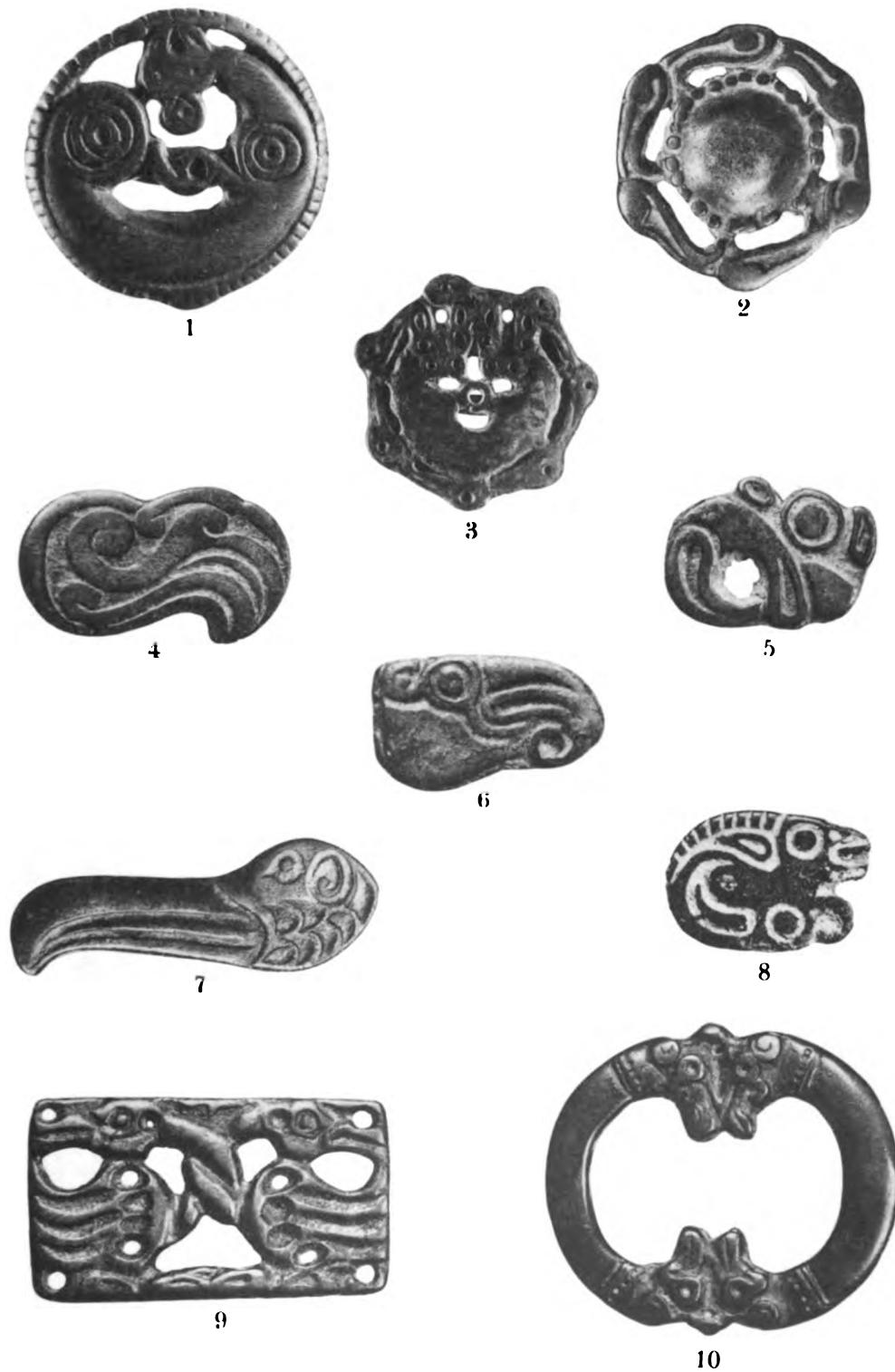
Ordos Bronzes: Bears, pigs etc.





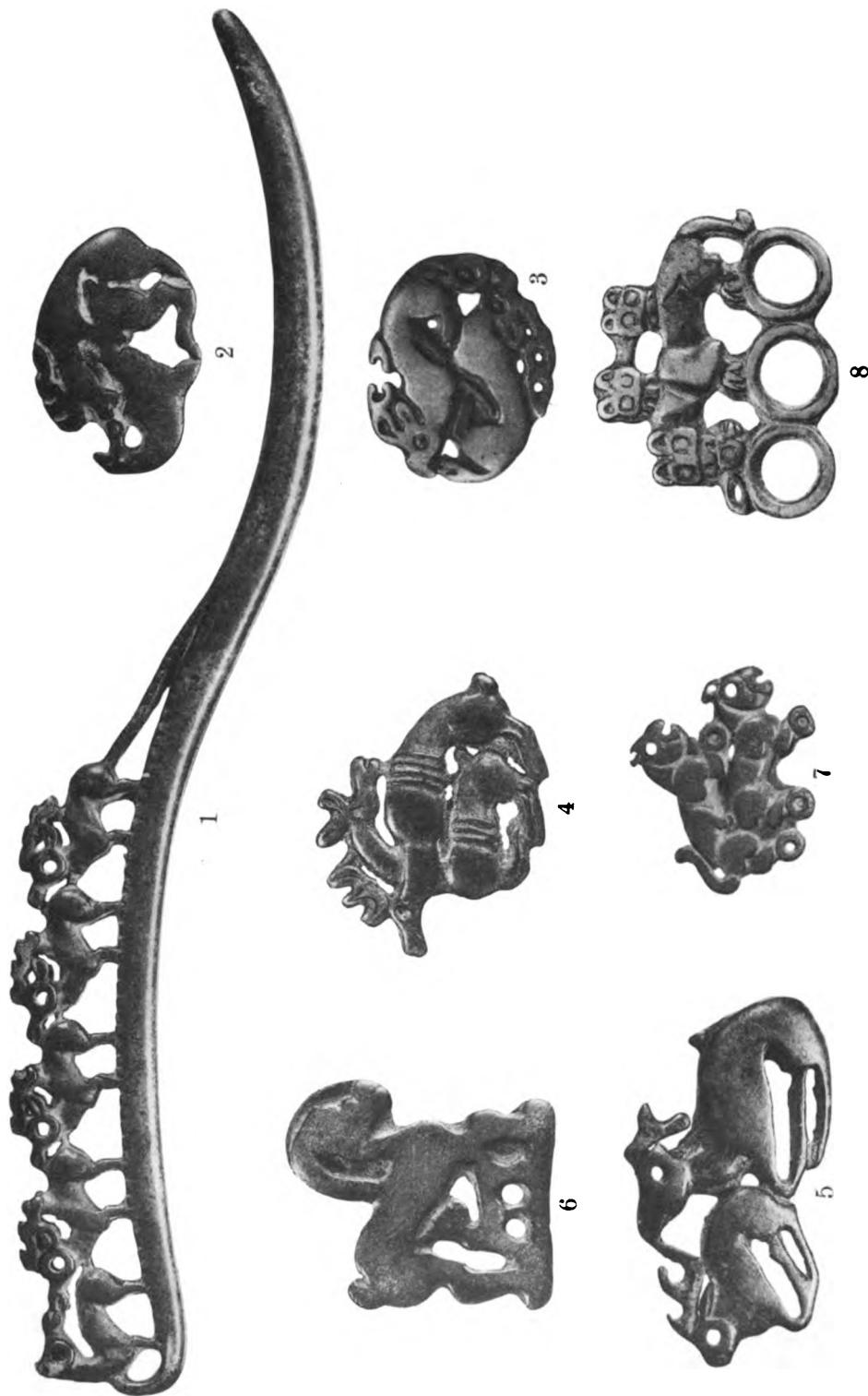
Ordos Bronzes: Sundry animals.





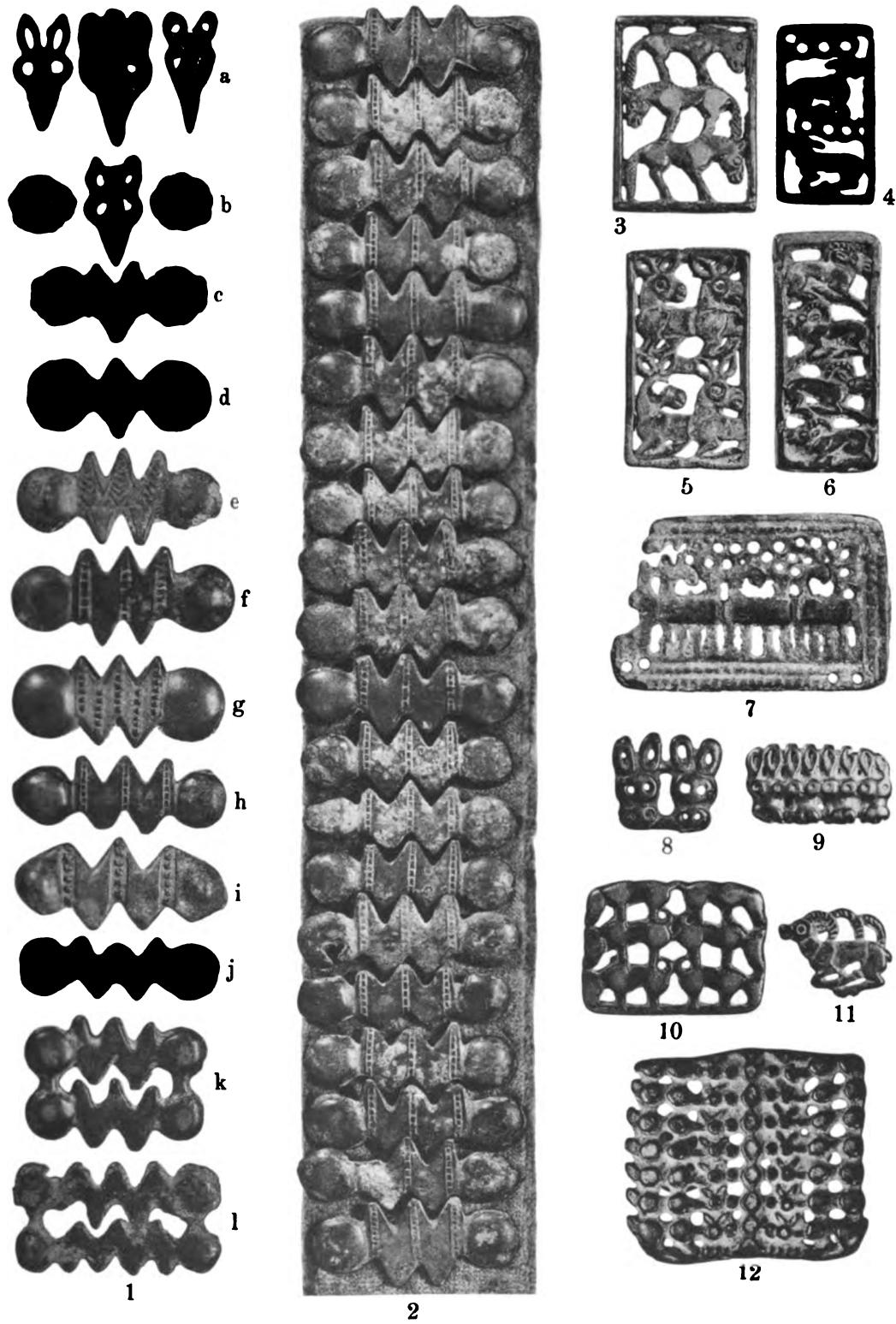
Ordos Bronzes: Stylized animals.





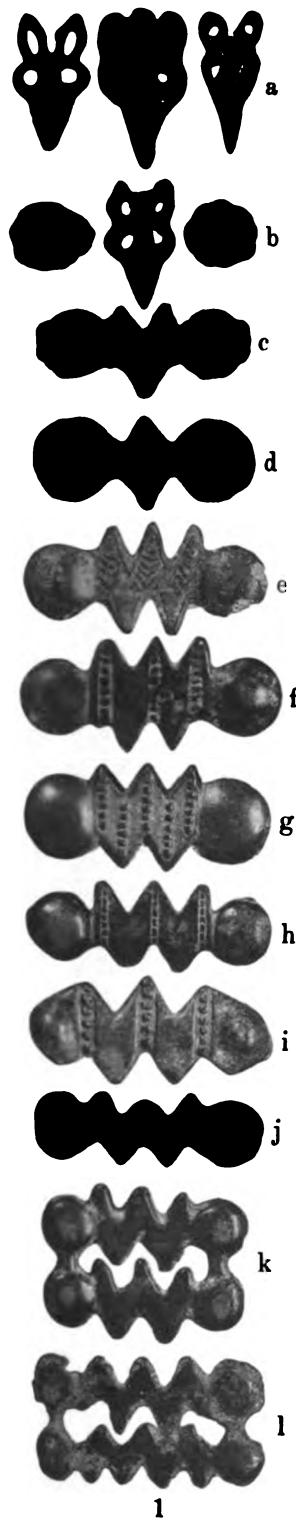
Ordos Bronzes: Family scenes.



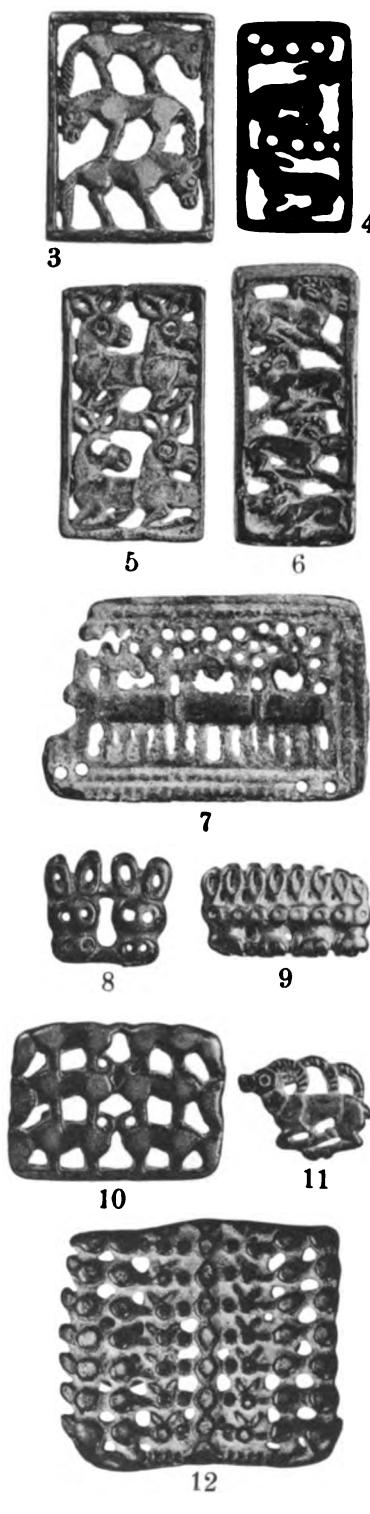


Ordos Bronzes: Multiplication of individuals.





Ordos Bronzes: Multiplication of individuals.







1



2



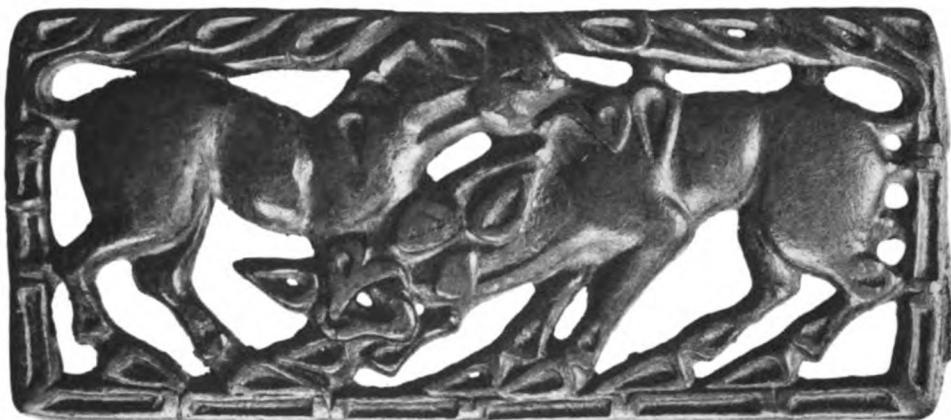
4



3

Ordos Bronzes: Masked animals.





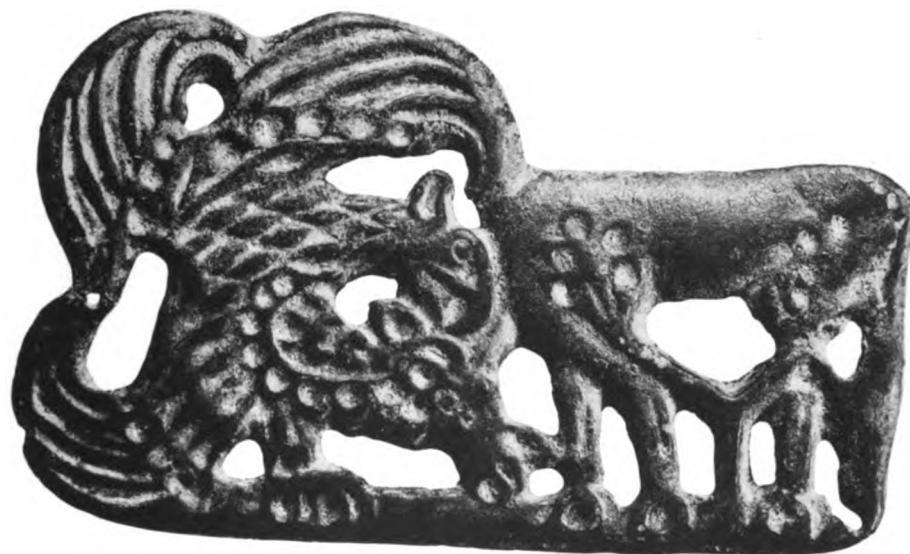
1



2

Plaque of combat: Mating fight.





1



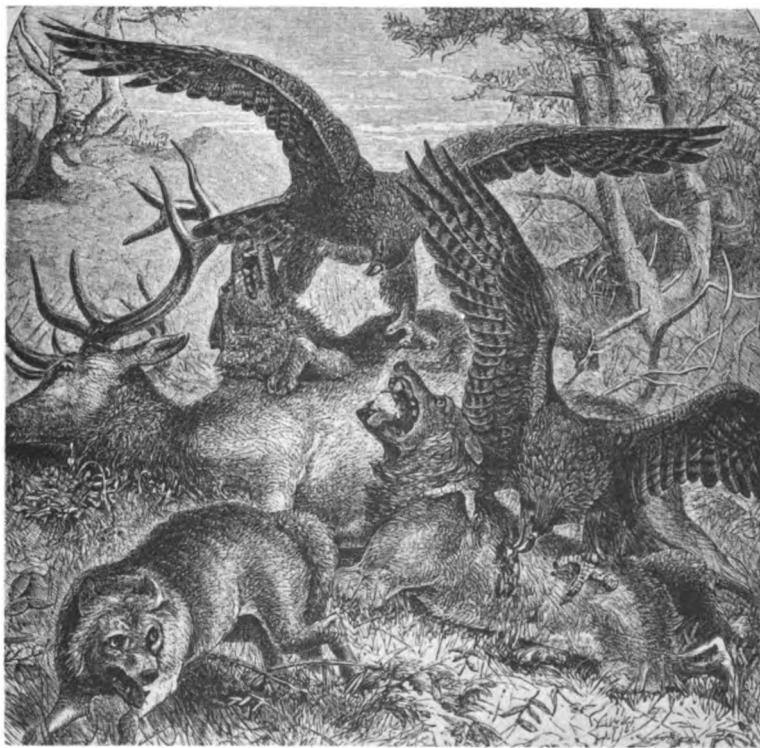
2

Plaque of combat: Eagle plaque.





1



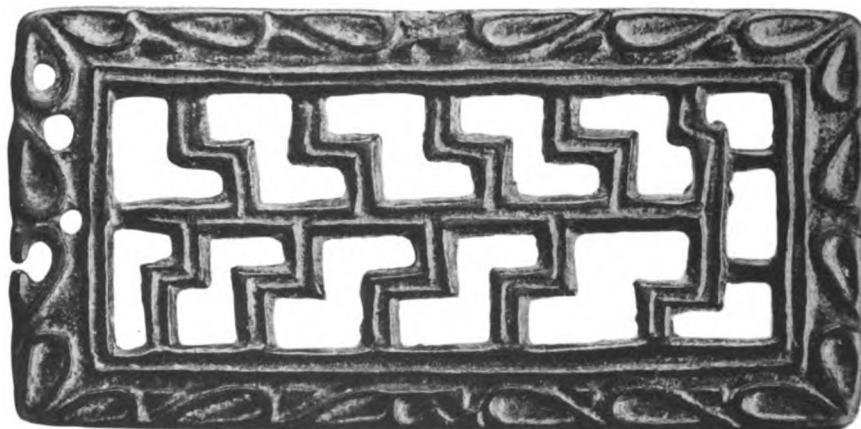
2

Plaque of combat: Wolf-eagle plaque.





1



2

Ordo Bronzes: Plaques.





Altai rock carvings.





Detail of Stone Baba. Inner Mongolia.



## CONTENTS OF THIS VOLUME

	Page
Dedication to H. R. H. Crown Prince Gustaf Adolf .....	V
Crown Prince Gustaf Adolf as a Promoter of Archaeological Research .....	1
Ivar Schnell: Prehistoric finds from the Island World of the Far East .....	15
Margit Bylin: Notes sur quelques objets néolithiques trouvés à Formose ..	105
Paul Pelliot: Les plaques de l'Empereur du Ciel .....	115
Bernhard Karlgren: Shi King Researches .....	117
Olov Janse: Tubes et boutons cruciformes trouvés en Eurasie .....	187
J. G. Andersson: Hunting Magic in the Animal Style .....	221

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With reference to plate XXXI, figure 2 of J. G. Anderssons paper "Hunting Magic in the Animal Style" in this present Bulletin 4, it should be remarked that Rosa Bonheur's painting "Le duel" was rendered as an etching, engraved by Joseph B. Pratt, and that this etching has been here reproduced by courtesy of the firm Raphael Tuck, London.